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# POPULAR PHOTOGRAPHY



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POWERFUL  
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LANDSCAPES  
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HOW TO MAKE GREAT PICTURES

## NEW FRONTIER

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POPULAR PHOTOGRAPHY  
**MENTOR SERIES**  
Ultimate Photo Adventure



© Aaron Meyers

Discover the majestic beauty of stunning red rock country in Sedona by joining the Mentor Series on this adventurous excursion. With Nikon professional photographers Reed Hoffmann and Wolfgang Kaehler on the trek you will enhance your photo skills and visual creativity all while being surrounded by this gorgeous Arizona landscape. Although Sedona is celebrated for a brilliant art community and a dynamic downtown, the charm of this city is really the red rock backdrop, which is visible from anywhere in town.

With this Mentor Series trek, you will start by photographing the Red Rock Scenic Byway as you travel through the hills and the ruddy sandstone formations. In the afternoon we will photograph the views from Bell Rock and Courthouse Butte Loop trail. This flat loop leads to two fascinating rock formations, the Bell Rock and the Spaceship Rock, which is an incomparable photo opportunity.

Start your second day in Sedona on the Pink Jeep Tour, an off-road adventure that will lead you to the scenic rim of Sedona from 2,000 feet above, which allows you to take your photography to a much higher viewpoint. This rugged exploration will deliver larger than life views of deserts, forests, high mountains, and of course, the surrounding red rocks. The day will then conclude along the Airport Mesa trail, which provides panoramic views of Sedona's best-known red rock landmarks.

Finally, this wonderful Sedona excursion will culminate with a visit to the historic Gold King Mine, a rustic assortment of old buildings, mineshafts, cars and trucks dating back to the 1890's. This remarkable mining town with its rich history will certainly provide you with incredibly unique photo opportunities while utilizing and enhancing an array of different photography skills.

As you take in the vibrant culture and incomparable surroundings of Sedona, you'll experience hands-on and one-on-one learning with the Mentor Series, making this an adventure that is not to be missed.

## MEET YOUR INSTRUCTORS



**REED  
HOFFMANN**



**WOLFGANG  
KAEHLER**

*"Having photographed the unusual rock formations in Sedona several times, I can't wait to share my photo knowledge about this picturesque location."*

## WORKSHOP FEE: \$1,250

Includes in-the-field instruction, entrance fees, presentations, digital reviews, and transportation to each shooting location





© Warren Weinstein



© Mark Myhaver



© Richard Roche

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*By Dan Richards*



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*By Ian Plant*



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*By Theano Nikitas*







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NEWSSTAND COVER: SATOSHI (SONY); IAN PLANT (ROCK FORMATION); SUBSCRIBER COVER: IAN PLANT (ROCK FORMATION); PREVIOUS PAGE: MATTHIAS HAKER (LONDON TUBE), IAN PLANT (TREES), ASHOK SINHA (COUPLE); THIS PAGE: CLAUDIA COOPER (ICE CAVE), ROB GREEBON (SAILBOAT), KYLE DREIER (FOOD).



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## The Power of the Print

Most of the photography I look at every day comes at me from a screen—usually a big monitor at the office, but also from a glossy little tablet, the matte screen of my aging laptop, and, yeah, my smartphone. Photographers send me links to portfolios; I sort through our monthly contest entries and consider picture selections for our magazines; and, increasingly, I get my news only online.

Of course, I still love to look at photos printed on postcards and in books and magazines. But the photos I spend the most time with are the ones on my walls, carefully made prints and unique photo-based works on paper, plus a handful of framed family pictures.

The chance to luxuriate in the physical presence of a great print isn't something most of us get to do very often. Even though the photos hanging in museums and galleries are usually behind glass, exhibitions at least offer photography up close for examination at sizes that allow us to properly admire them. For its last show at its midtown museum location in New York City (see Lowdown, page 16), the International Center of Photography hosted a blockbuster exhibit of Sebastião Salgado's *Genesis* series—majestic black-and-white landscapes, wildlife scenes, and portraits. These mammoth prints gave the images a richness, depth, and impact far above their power on a screen or even in a book.

At the other end of the fame-and-glory spectrum, I recently judged a fantastic photo contest called the Krappy Kamera Competition, now in its 17th year. Hosted by the nonprofit Soho Photo Gallery in New York, it's open solely to photos made using pinholes, toy cameras, and other low-tech gear. The winners and runners up will get to see their photographs on the gallery walls for the month of February—and the weekend after this column goes to press, I will help decide how to hang the show. Since I judged the competition online, this will be my first chance to see the actual prints, and I can't wait!

Why am I telling you all this? Merely to exhort you not to give up on printing at least a few of your digital photos. Send them out to a lab that will help you get just the look you want, or buy a really good inkjet printer such as the new one from Epson reviewed on page 68. If you're still shooting film, don't stop with just a contact sheet or box of transparencies. Put your best work on paper and rediscover the joy of print.

*Miriam Leuchter*

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**NEWSSTAND** Sony updated its pioneering full-frame ILC to give the Alpha a7 II matchless in-body image stabilization (page 61). Photograph by Satoshi.

**SUBSCRIBER** Nature photographer Ian Plant offers a crash course in color (page 42), exemplified by this shot from the Virgin Mountains of Nevada.



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SHOWCASE \* ROKINON 50MM F/1.4 AS IF UMC







## WINTER'S TALE

Online editor Stan Horaczek shot this frozen scene in the Albany (NY) Pine Bush Preserve on a snowy afternoon using the Rokinon 50mm f/1.4 AS IF UMC lens on a Canon EOS 5D Mark III. Falling flakes make autofocus tricky, so this smooth manual focus-only lens was right at home; its included lenshood protected the front element. He shot wide open at f/1.4 (at 1/2000 sec, ISO 100) to give the scene a dreamy feel and throw the tree in the foreground out of focus. See our full lab and field test of this full-frame normal lens on [page 73](#).



# MetalPrints

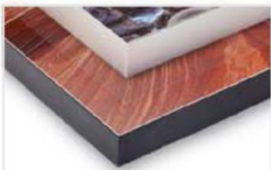
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Images by (from left): apertureacademy.com | Matt Hofman | Steve Harrington | Annie K. Rowland | Suzette Allen



# NEXT

THE HOTTEST NEW STUFF AND THE TECHNOLOGY TRENDS BEHIND IT

WE WANT THIS

A TABLET COMPUTER FOR PHOTO EDITING



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ACTION CAM OFFERS 4K VIDEO CAPTURE



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ROUNDUP: PORTABLE STORAGE DRIVES



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## RES ON A ROLL

Canon adds two new high-pixel DSLRs

**EVIDENCE, PERHAPS,** that the pixel wars may never end, Canon's new EOS 5Ds and EOS 5DsR both use a full-frame 50.6MP sensor with a pixel pitch that matches that of the EOS 7D Mark II. A pair of Digic 6 processors crunch the output of this sensor, while a 61-point autofocus system and 150,000-

pixel metering system aim to keep your shots in focus and properly exposed.

The AF Microadjustment II makes it easier for you to fine-tune focusing: You take a nine-frame focus bracket and you select the sharpest shot and lock in the adjustment. Mirror lock-up now has a single-step

process with a user-selectable delay of up to 2 seconds. Video capture tops out at 1080p60 and a new Timelapse Movie mode will automatically compile a movie from a sequence of stills. The only difference between the two models is that the 5DsR includes a low-pass filter cancellation feature.

### CANON EOS 5Ds & 5DsR

**Full-frame 50.6MP CMOS sensor**  
**ISO 100-6400**  
**Single-step mirror lock-up with program delay**  
**61-point AF**  
**\$4,000 (5Ds) or \$4,300 (5DsR), street, body only**



[NEXT \* JUST OUT]

# EDITOR AID

A tablet computer for photo retouchers

**EVER RESPONSIVE** to user feedback, Wacom has updated its tablet computer, the Cintiq Companion, a unique touch- and pen-based editing platform. Available in five versions (depending on processor configurations), the new 13.3-inch Cintiq Companion 2 has a 2560x1440-pixel display, three USB 3.0 ports, SD and microSD card slots, six programmable ExpressKeys, and a mini-DisplayPort output. Best of all is that, even though it runs on Windows 8 for mobile retouching, you can plug it into any computer with an HDMI output (including a Mac) and use it to work on an image editor running on that machine.



Wacom Cintiq Companion 2

**\$1,300 to \$2,700, estimated street**

wacom.com

## STURDY SHOOTER

**Olympus refreshes a favorite interchangeable-lens compact**

**WITH WEATHER SEALING**, bursts of 10 frames per second, a top shutter speed of 1/8000 second, and a 2.36-million-dot electronic viewfinder with a fast refresh rate, the new Olympus OM-D E-M5 Mark II, like its predecessor, is made to tackle action.

At the same time, its 40MP High Res Shot mode can make super-detailed images of stationary subjects (see Inside Tech at right). Olympus's TruePic VII processor handles the number crunching. An updated five-axis stabilization system, powered by voice coil motors,

claims a 5-stop advantage and can also be used to steady video capture. That's one of the many features of this updated ILC that we're looking forward to putting to the test as soon as we can.

Olympus OM-D E-M5 Mark II

**\$1,100, estimated street**

olympusamerica.com



## NEWS FEED

> **Sports Illustrated** laid off all six of its staff photographers as part of a restructuring at its publisher, Time Inc.

### INSIDE TECH

## Raising Resolution

Similar to the technique used by Hasselblad in its H5D-200c, the Olympus OM-D E-M5 II uses its image stabilization system to shift the camera's 16MP CMOS sensor in half-pixel increments while capturing a series of eight frames. It then combines all of that data into a single image to create a higher-resolution photo with an effective pixel count of 40MP.





## SHRUNK TO FIT

**Nikon squeezes a big tele lens into a smaller barrel**

**TOUTED AS** the world's lightest 300mm full-frame, fixed-focal-length autofocus lens, this new 300mm f/4E PF Nikkor is much smaller than Nikon's 300mm f/4G and quite close in size to its 24–70mm f/2.8 zoom. The “PF” in the product name hints at how Nikon managed to do it: It stands for Phase Fresnel, which is similar to the Diffractive Optic

lens element that Canon recently used in its compact 400mm f/4 lens. This optic bends the light outward and then back inward by pairing the PF element with a traditional element, allowing smaller, lighter lens (1.7 pounds versus 3.2 pounds) that also compensates for distortion and chromatic aberrations.

Nikon AF-S Nikkor 300mm f/4E PF ED VR  
**\$1,997, street**  
 nikonusa.com

## SELFIE X

Fujifilm's tiny ILC captures you

**REFRESHING ITS** entry-level X-series interchangeable-lens compact camera body, Fujifilm is jumping on the selfie bandwagon with its new 16.3MP X-A2. The 920,000-dot LCD monitor tilts upward 175 degrees to let you better frame your own best model as you take your self-portrait.

Sharing to social media gets even easier, thanks to the camera's built-in Wi-Fi connection. The sensor's sensitivity spans ISO 100–25,600; a new Classic Chrome film simulation mode has been added; and video capture tops out at 1920x1080p at 30 frames per second.

The X-A2 ships with a newly developed 16–50mm (24–76mm equivalent) f/3.5–5.6 image stabilized lens that claims 3.5 stops of motion compensation.

Fujifilm X-A2  
**\$550, with 16–50mm f/3.5–5.6 lens**  
 fujifilmusa.com



## NEWS FEED

> Samsung released firmware version 1.2 for the NX1, improving its interface and movie recording. It also adds the Trap Shot function to automatically trip the shutter when a moving subject crosses a designated part of the frame.

> Cotton Carrier has updated its line of camera carrying products to better fit ILCs and will include all-weather protective covers with all of its Camera Vests.

> LensRentals has launched a Keeper program to let renters buy gear with their rental fee deducted from the price, which is based on the age of the equipment.

> A study published in the *Journal of Creative Behavior* that ranks the sexiness of various types of creativity says that “the taking of artistic photographs” is sexier than “performing in comedy,” but not as sexy as “performing in a band.”



## New Software

### Athentech Perfectly Clear Mobile 4.0

This update to the Android version of the robust photo editing app (\$3, Google Play store) adds Blemish Removal, Face Slimming, Eye Circle Removal, Shine Removal, and Catchlight adjustments. Retouching can be applied yourself or automatically. The new version can detect age, gender, and facial features to help determine application. An iOS version should follow in about a month.



## Ready for Action

**WHILE GOPRO** still seems to dominate the action camera market, Sony has been providing compelling competition. Its latest, the X100V, brings 4K video capture to the party. The built-in stereo microphone offers wind-noise reduction, which should help, given that these cameras will likely be used on mountain bikes hurtling down terrain fast enough to raise a gale even on a still day. Sony also says that the SteadyShot image stabilization has also been improved over previous models.

Sony X100V Action Cam  
**\$500, street**  
 store.sony.com



Samsung's little T1 puts as much as a terabyte of solid-state memory in your pocket.

## NEWS FEED

>The World Photography Organisation (worldphoto.org) added a mobile category to the 2015 Sony World Photography Awards to highlight images made with smartphones. The submission deadline is Feb. 27.

>Nikon issued a service advisory for the "dark band" flare issue affecting some D750 bodies. Free fixes will be offered for any cameras affected.

>Rep. Steve Stockman (R-Texas) introduced H.R.5893, the Ansel Adams Act, to "restore the first amendment rights of photographers" in response to recent restrictions on photography on public lands.

>Adobe's forthcoming Photoshop Lightroom 6 will run only on 64-bit operating systems: Apple's Mac OS X 10.8 and higher, or 64-bit versions of Microsoft Windows 7, 8, or 8.1.

## TOOLBOX

## MIGHTIER MICRO

**EVEN THOUGH** a super-speedy UHS-II (U3) microSD card like the new Lexar Professional 1000x may seem like overkill for your smartphone, as action cameras such as the Sony on page 15 continue to delve into 4K video capture as well as faster frame rates for slow motion, that extra speed will come in handy to make sure your movie recording sessions go smoothly.

Super-fast cards make an even bigger difference when you want to transfer those large video files to your computer. As they often do when introducing a fast new card, the folks at Lexar include a UHS-II USB 3.0 reader in the bundle so you can make the most of the card. According to Lexar, the cards have a read speed of 150MB per second. The new cards are being made in 32GB, 64GB, and 128GB capacities and sell at a street price of \$47 to \$149.



## THE LOWDOWN

## ICP EYES DOWNTOWN NYC

New York's International Center for Photography was forced to close its midtown museum in January, though its school and library remain in midtown, and its collection will move to Mana Contemporary's space in Jersey City, NJ. Now ICP has applied to the Build NYC development agency to help finance the purchase of a \$23.2 million, 11,009-square-foot retail condo at 250 Bowery for a museum and shop.



## STORE &amp; GO

**AS HARD DISK** drives and solid-state memory continues to improve—and to drop in price at the same time—your options for portable storage just keep getting better. Here are four new storage options that will make sure you've got room to back up your images wherever you are.



**Seagate Seven \$99** Pushing the limits of slimness, the Seagate Seven, just 7mm thick at its edges, can hold 500GB of data and sports a USB 3.0 port for fast transfer speeds. A stainless steel enclosure helps to protect the 5mm-thick drive inside. The design is so spare that, at first glance, it resembles a small internal drive.

**G-Technology G-Drive ev RaW \$100–\$130**

In 500GB and 1TB versions, this drive is made tough. Without its rubber bumper, G-Tech says it can withstand a fall of 3.9 feet (with the bumper, 4.9 feet). A USB 3.0 port aims for speed; SATA lets Mac users pair it with the G-Dock ev for a Thunderbolt connection.



**LaCie Mirror \$280** Possibly the most attractive drive in this list, the 1TB LaCie Mirror comes with an ebony wood display stand and its shiny enclosure is covered in Corning's Gorilla Glass to resist scratches. Connect it to your computer through its USB 3.0 port and you can do your hair while you back up your images.



**Samsung T1 \$180–\$600** The smallest and lightest drive on this page (2.8x0.4x2.1 inches, 0.9 ounces), this solid-state drive comes in 250GB, 500GB, and 1TB capacities. It's rated at 450MB/sec through a USB 3.0 interface. A password setting with AES 256-bit encryption provides peace of mind should it go missing.





## Future proof your facility with advanced 4K SD, HD and Ultra HD mini converters!

Blackmagic Design's new high performance mini converters switch instantly between all SD, HD and Ultra HD video formats so they're ready for Ultra HD when you are! Mini Converters are available in regular or heavy duty models that are machined from solid aluminum so they look beautiful and are super tough! Choose from models with 6G-SDI, HDMI, analog, optical fiber connections and more.



### Auto Switching SD, HD and Ultra HD

Mini Converters instantly switch between Ultra HD and all SD or HD formats, including NTSC, PAL, 1080PsF23.98, 1080PsF24, 1080PsF25, 1080i50, 1080i59.94, 1080i60, 720p50, 720p59.94 and 720p60. Updates can be loaded via USB.



### Redundant SDI Input

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## PHOTO CHALLENGE

## TO THE POINT



Vibrant colors and the right angle win the pennant

**VITALI HANTSEVICH**, a mechanical engineer from Chicago, Illinois, traveled to Nepal in December 2013 to reach new heights, literally. He was on a mission to trek to base camp at Mt. Everest, and came back with this dynamic shot as one of his souvenirs. The strings of fluttering flags connected to a single point answered our call for a photo with strong leading lines.

Hantsevich captured this winning shot of prayer flags at Boudhanath Stupa in Kathmandu, Nepal, when the visual and aural effects of the scene drew him in. He couldn't resist the colorful flags waving in the breeze so he stopped to capture the moment amid a bustling crowd. In order to compose an obstacle-free frame at such a busy location, he shot straight up towards the Stupa to avoid including tourists.

**Vitali Hantsevich shot these prayer flags in Nepal with a Canon EOS 6D with a 17-40mm f/4L Canon EF USM lens; 1/640 sec at f/10, ISO 800.**

In editing the image, Hantsevich cropped the frame to move the spire off-center and then made minor adjustments to exposure in Adobe Photoshop Lightroom 5.0.

—Sara Cravatts

**NEXT PHOTO CHALLENGE** In "Building Photos" (page 48), four photographers share their trade secrets for capturing structural shots. Send us your best architecture photo by March 31 and you could win \$100 and your story here. Enter at [PopPhoto.com/contests](http://PopPhoto.com/contests).



SHARE \* MY PROJECT

# She's Got Legs

## Street portraits from the hips down

**STACEY BAKER'S** first pair of legs was delicate and slender, sprouting beneath a uniquely cut coat. In March 2013, she spotted them walking through the lobby of the Waldorf-Astoria hotel and couldn't resist asking their owner if she could take their picture. Ever since then, Baker, an associate photo editor at *The New York Times Magazine*, has been

scouring the streets of New York, photographing women below the belt for her ongoing Instagram project, *CitiLegs*. It's a typology of fashion and body shapes, a portrait series, and an exercise in smartphone-era street shooting. Baker, a former lawyer from Texas who switched careers in her mid-30s, relishes *CitiLegs*' informality.

Her gear is simple—an Apple iPhone and the Instagram app—and her process streamlined and serendipitous: She approaches a

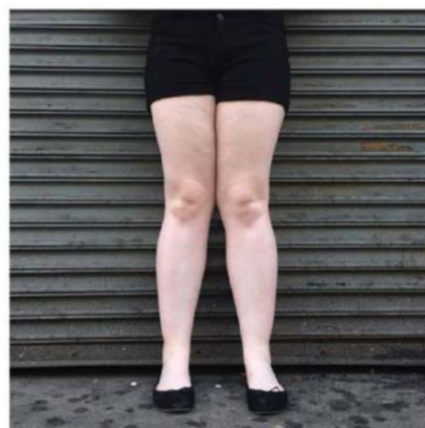
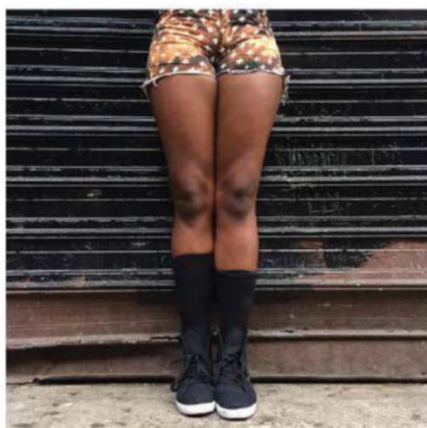
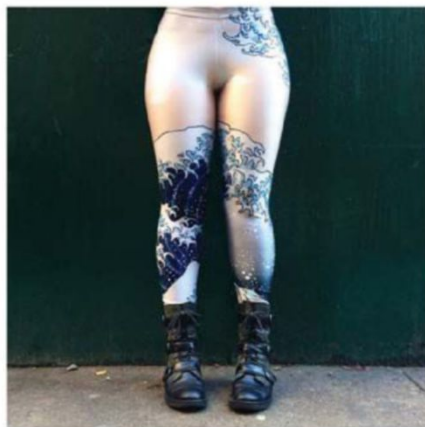
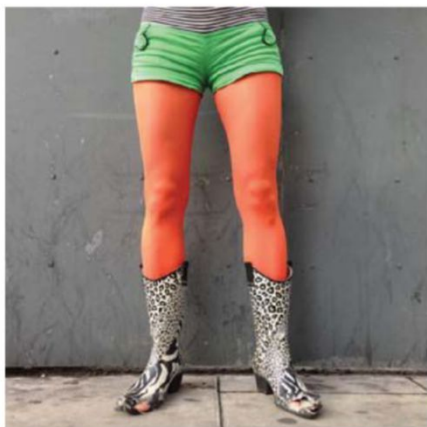
potential subject, offers a quick spiel about *CitiLegs*, and then, if the woman agrees, Baker asks her to stand in front of a wall and raise her top so she can photograph as much of the legs as possible. She crops square and may adjust the horizon line or play with contrast, but otherwise she posts the photo to Instagram untouched.

Choosing the right pair of legs is key—great fashion, she notes, sometimes hides great form. She also must find a wall nearby.



**Stacey Baker** is associate photo editor at *The New York Times Magazine*.





**Untitled images, shot with iPhones (4S, 5, and 5s), from Baker's Instagram account @CitiLegs, where she posts all of the images from this series.**

These backdrops not only provide continuity, but also eliminate distractions and highlight each woman's shape. "The most successful pictures are sculptural," Baker says. "I think a woman's personality is most conveyed in her stance and what she's wearing. It could be that, in some instances, because their face isn't being shown, they're game to have a different stance."

While long, lean legs tend to get the most "likes" on Instagram,

Baker believes women with fuller figures make for more beautiful pictures. She's received overwhelmingly positive feedback from women who feel empowered by the diversity shown in the project, and Baker hasn't had to deal with many trolls (comments on fashion are fine; attacks on body shape are not). Though she hopes to turn the project into a book, Baker says Instagram remains the perfect viewing space—open and accessible to all.

As much as CitiLegs has honed Baker's eye, it has also proved enlightening for this woman who once dreamed of having longer, skinnier legs. "I have become increasingly aware of the female figure and what makes for a beautiful shape—and it can be anything," Baker says. "That's been really good for my self-image, the fact that, hey, I might not have Christy Turlington's legs, but there's something beautiful in my shape."

—Jon Blistein



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**KEEP THE HEAVENS SHARP** For a bright sky, Banzon exposed for 30 sec at f/2.8, ISO 4000. Treks have taught him to master his camera "like a soldier masters his gun before battle."

# SHOOTING STARS

Capture the night music in star-studded skies

**AFTER MIDNIGHT** on a frigid November night in 2014, Manny Banzon, an orthopedic surgeon from Freehold, New Jersey, reached a clearing high in the Sierra Nevada mountains at Yosemite National Park. The atmosphere was free of dust, humidity, and light pollution, and this view of the Milky Way proved one of the most stirring he'd experienced across eight Mentor Series adventures that had spanned the globe.

"Earlier that afternoon, we had just gotten back from a shoot and everyone was tired with achy feet from hiking," Banzon recalls. "The mentors proposed astrophotography as an after-dinner project, but I didn't think the group was particularly receptive to the idea." To his surprise, later that night a majority of the trekkers showed up at the predetermined meeting place, and after a 15-minute walk through the dark, they encountered the scene above.

Banzon learned a lot about shooting stars that night. "For astrophotography, you need a



**MANUEL BANZON**  
An ardent trekker, he and his wife Louise just returned from a Mentor trip to Venice, Italy, and Croatia.

fast, wide-angle lens and a sturdy tripod, and it helps to be patient and persistent," he says. The wide-angle lens will embrace most of the sky, while its large aperture will provide workable exposures despite the low light levels.

"The mentors told us to set an ISO from 3000 to 4000. Any higher, and there would be too much noise. Any lower, and our shutter speeds would rise above 30 sec, the point where stars become star trails," says Banzon. Shooting near maximum aperture also helped hold shutter speeds to 30 sec.

As for composing the night sky, Banzon recommends including a framing element in your foreground—the mountain peaks above, for example. "If you do, you will probably need to pull back your focus a bit to keep that foreground sharp," he suggests. ●

MANUEL BANZON; LOUISE BANZON (PORTRAIT)

# GONE TO THE DOGS

Instead of shooting pets, you should shoot the guy who wrote, in the article "A Dog's Life" (February 2015), "To defuse a tense moment, walk slowly toward the subject and place your camera on the ground. Walk away and let the dog sniff the camera." That sounded useful, so I tried it. I placed the camera on the ground and backed slowly away. The dog moved up and sniffed the camera, as your article said. Then he raised his hind leg and...uh, well, the article did not describe what happened next. The dog was no longer aggressive, but I sure was. Maybe you should warn your readers.

**Bob Deffeyes**  
Via PopPhoto.com

**JUST BECAUSE A** photographer is irresponsible, we wonder how a large-circulation magazine would both condone and celebrate it. The elephant in the February 2015 issue ("Nature by Drone") appears to be in a defensive stance against the drone harassing him. One wonders what he might do the next time a motor vehicle that he may associate with a drone comes too close. The hippos appear to be moving away from the harassing drone as indicated by the water ripples.

Frightening animals deliberately is not an indication of a subject-respectful, conservation or environmentally concerned photographer. Please do not encourage people in such unethical behavior.

**Linda and Robert Scarth**  
Cedar Rapids, IA

**EDITOR'S NOTE:** We asked Paul Souders, who shot both of these images using a small drone, to respond to this letter directly. His reply is below.

**AS A PROFESSIONAL** photographer with more than 30 years' experience, I've worked hard to establish trust with my wildlife subjects and to behave responsibly in the field. The best wildlife images come from unthreatened, relaxed subjects, and I've strived in my work to capture

those moments. The letter writers are certainly entitled to express their opinion, but the animals in question were neither harassed nor frightened any more than by the approach of a safari truck or another species. Wildlife photography is not an exact science, especially when one is exploring new viewpoints and techniques, but it is up to each of us avoid deliberately harassing any animal.

**Paul Souders**  
WorldFoto  
Seattle, WA

## f FROM FACEBOOK •

**OUR POST** about the so-called Ansel Adams Act—a bill that would protect the right to photograph federal lands, buildings, and employees—drew lots of comments. Here are a couple.

*The next step is to remove all those many fees required for commercial photography or at least facilitate their payment afterwards.*

—Jose Antonio Castellanos

*The bill was introduced on the last day of the 113th Congress by [Rep. Steve] Stockman on his last day in office, having lost his campaign for re-election.*

*The whole process will need to be begun again.* —Heath James McKenny

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# Natural Habitats

This month's winners explore the home, backyard, and beyond

## 3rd Place \$100 Prize

KAY BREWER, 66, RETIRED AIR  
FORCE PROGRAM ANALYST,  
NICEVILLE, FL

An avid bird photographer, Kay Brewer had her camera ready on a tripod, poised to capture goldfinches on a feeder, when this cardinal flew into her frame. She imported the image into Adobe Camera Raw in Photoshop CS6 and cloned out the feeder, increased contrast, adjusted shadows and glare, and reduced noise to highlight the details of the bird.

**TECH INFO:** Canon EOS 5D Mark III with 100-400mm f/4.5-5.6L Canon EF USM lens; exposure 1/400 sec at f/6.3, ISO 500. Edited in Adobe Camera Raw in Photoshop CS6.



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## ▲ 2nd Place \$200 Prize

**CLAUDIA COOPER, 55, BUSINESS ANALYST,  
SEATTLE, WA**

Claudia Cooper ventured to Iceland on a photography workshop and found herself (and 15 others) packed into a small, frozen cave. The lack of space was a challenge, making wide-angle shots out of the question. As a solution, Cooper shot close-ups of the beautiful patterns and colors in the walls of ice. Since the colors were truly amazing on their own, Cooper just made minor adjustments in Photoshop CS5 to finish up.

**TECH INFO:** Canon EOS 5D Mark II with a 16–35mm f/2.8L Canon EF II USM lens; 1.6 sec at f/11, ISO 200.  
Edited in Photoshop CS5.

## ► 1st Place \$300 Prize

**BRENDAN KELLY, 44, HIGH SCHOOL TEACHER,  
FORT WORTH, TX**

U.S. Army veteran Brendan Kelly was inspired to photograph while watching his youngest daughter reading peacefully in their living room. Kelly captured this portrait of his daughter Megan using an Apple iPad as a camera and the white side of a reflector to bounce extra light onto her face. To give this image the dreamlike effect he wanted, Kelly used Autodesk's Pixlr app on his iPad to soften, add slight contrast, and heighten blur to play off of the girl's eye and earring.

**TECH INFO:** Apple iPad (4th generation); exposure not recorded. Edited in Autodesk Pixlr.







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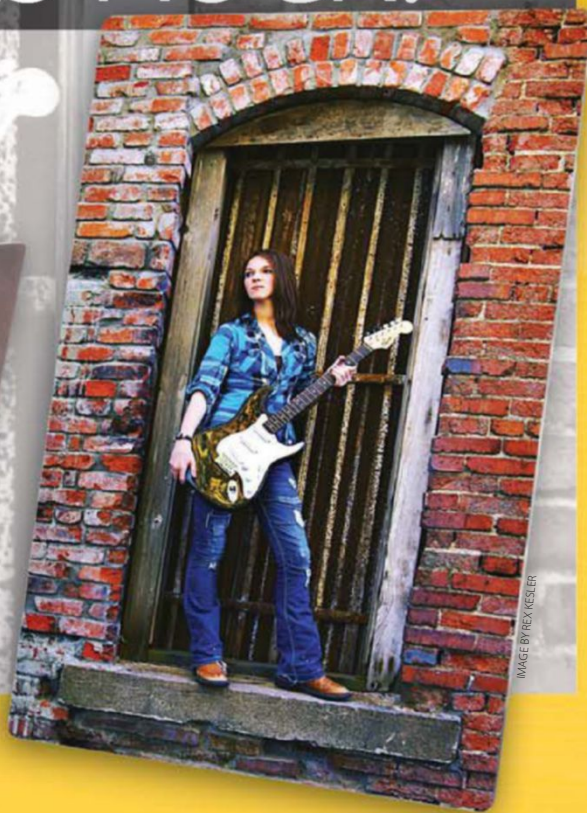
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CREATIVE THINKING

## NIGHT LIGHTS

### Helping fireflies continue their alluring nocturnal performances

**“AWARENESS TO** protect fireflies has increased recently in Japan,” says Nagoya-based photographer Takaaki Ishikawa. “I wanted to help bring attention to their faint and beautiful lives.” So he spent three years studying the insects,

shooting more than 1,000 frames, and eventually editing those down to six killer images. His perseverance paid off especially with the interpretation of the miniature will-o'-the-wisps shown in the photo here.

“Most fireflies in Japan, called *genjibotaru*, flash their light slowly, so the lights are rendered as lines [in most photographs],” Ishikawa

**For more of Ishikawa's firefly photos, visit [500px.com/yume-](http://500px.com/yume-)**

says. “But one day I saw a friend's firefly photo with circular lights and I felt they were more fantasy-like.” These pinpoints of light were the result of shooting a different species of firefly, one called *himebotaru*, that emits a quicker, flickering burst of light.

After a little research, Ishikawa uncovered two *himebotaru* habitats in Nagoya. “I chose this particular

TAKAAKI ISHIKAWA



location for its natural beauty,” he says, “but now there’s a plan to build a road right next to this location and I hope that my pictures could help prevent that in the future.”

So for three years, Ishikawa grabbed the narrow window of opportunity for capturing the *himebotaru*: a few hours nightly in late May and early June. He waited for evenings with maximum moonlight to help illuminate the bamboo copse, and he learned over time that the peak hours were between 9 p.m. and midnight.

Using a Canon EOS 5D Mark II on a tripod with a Sigma 50mm f/1.4 DG HSM lens wide open, Ishikawa exposed for various shutter speeds, eventually settling on about 30 seconds. He typically made dozens of frames per outing.

Finally on June 1, 2013, a small miracle occurred. “I usually keep my distance from the fireflies,” he says. “However, on the night that I shot this photo, the fireflies came towards me. I had the happy feeling that they felt safe with me. I knew I had the shot before confirming the photo on my camera!”

From about fifty exposures that evening, Ishikawa chose six to layer together into this final composition. “I only edited it during RAW conversion so the green of the background bamboo looked better,” he says.

“Growing up in Japan, fireflies were a common sight and symbolized that summer was near,” he says. “Now they are a rare sight and you have to seek out special locations for them.”

If the image speaks to you, do an internet image search for Japanese fireflies. The shots that capture both the long and short firefly emissions are especially interesting. —Laurence Chen

## FIX IT FAST

# NEW HUES

## Dial down blues to kill the blahs

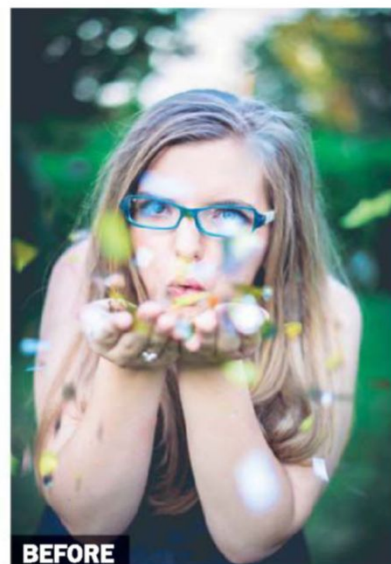
**LAURA CARLSON**, a gifted wedding and lifestyle portraitist from Evansville, Illinois, captured this spontaneous moment during a fun-filled portrait session with high school senior Shauna Purdy. I liked its carefree feel, but the overall blue cast and washed-out skin tones, I thought, needed some work.

I dove in by selecting the cyan channel in a Hue/Saturation Adjustment layer. I dialed saturation down to -48 but it wasn’t enough to tone down those blues, so I selected the blue channel from a Levels Adjustment layer, and made a +38 move to the shadows. Progress made.

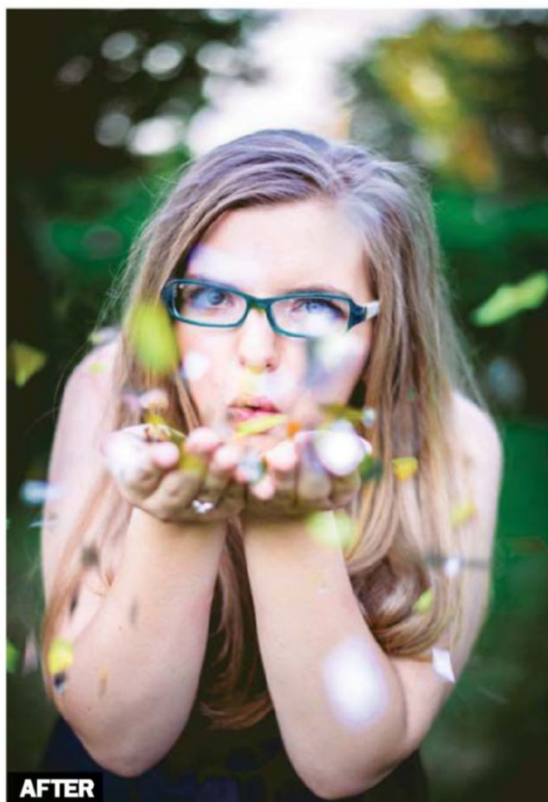
Next, to add a hint of skin tone, I tweaked a red Curves Adjustment layer by just a degree or two. Finally, I made slight corrections to the Exposure, Offset, and Gamma sliders of an Exposure Adjustment layer to add much-needed depth to the blacks. Total fix time: 10 minutes.

—Wesley Fulghum

LAURA CARLSON/LCPHOTOART.COM



BEFORE



AFTER

## DID YOU KNOW? DYES OR PIGMENTS?

**IN THIS** month’s review of the Epson SureColor P600 inkjet printer (page 68), Andrew Darlow points out that its UltraChrome HD inks are pigment-based. Not all printers, however, use pigment inks. When shopping for an inkjet printer, it helps to have a clear notion of what you expect from the printer, and whether its inks—dye- or pigment-based—will be able to meet those expectations. If your main concern is bright, vibrant color and strong contrast, printers that rely on dye-based inks are traditionally the product of choice. These printers (and their ink cartridges) are usually less expensive than pigment-based options. On the other hand, if your hope is that the images you print will last well into the next century, then a printer using pigment-based inks is the way to go. Not only are these inks less vulnerable to fading when exposed to sunlight’s ultraviolet rays, but because they’re not as water-soluble as dyes, they’re less likely to smear or streak when exposed to liquids, including finger oils.



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QUICK TIP

# BLUE SKY

Use H<sub>2</sub>O's mirror-like qualities

**WANT A TRICK** for making eye-catching waterscapes? Look for opportunities to exploit water's mirror-like reflective qualities, as Chris Tennant, a physicist and ardent photographer from Williamsburg, Virginia, did here.

In this shot, the sun had just set, and the water in Medicine Lake [Jasper Park, Alberta] reflected the blue sky above, creating a silvery expanse of whites, blues, and blacks.

The window for capturing such scenes closes quickly, so be prepared. It typically occurs immediately after sunset, while

there's still enough light aloft for the sky to read as blue. Try this before the sun sets, and the scene's contrast will be too high to capture in a single exposure. Wait too long and the reflected tones will not be silvery blues, but leaden grays and blacks.

"With landscapes, it's important to keep in mind that opportunities to photograph do not begin when the sun rises and end when the sun sets," says Tennant. "Before sunrise and after sunset can be especially productive for landscape photographers." —*Peter Kolonia*

While touring Canada's Icefields Parkway, Tennant exposed this picture for 10 sec at f/8, ISO 320 with a Canon EOS 5D Mark II and 24–105mm f/4L Canon EF IS USM lens.

## What's This?

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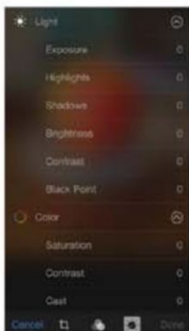
► **Why use it:** The LED Light Cube (\$659, street; [ledlightcube.com](http://ledlightcube.com)) lets users custom-set flash duration times from one full second to an action-stopping 1/8000 sec. In addition to accessory light modifiers, these stackable lights, offer adjustable output, insignificant recycle times, and fast charging speed.



### 30-SECOND SOFTWARE IOS 8 EDITING ADVANCES

The editing functions in Apple's Photos app used to be pretty minimal, but with the advent of iOS 8, they have become far more sophisticated. If you haven't tried them yet, tap Edit when viewing a photo. Then tap the little dial icon that's just to the left of Revert. You'll see options to edit Light, Color, and B&W, but you can dig deeper still by clicking on the down-pointing arrows next to each. In Light, you can individually tweak Shadows and Highlights, and even move the Black Point. Among other adjustments and fixes, Color has a tool to help remove (or add) color casts, and B&W allows you to add grain.

—*Debbie Grossman*



# Texas Treasure

## The Gulf Coast teems with birds and boats

**"I HAVE** lived in Houston since 1982 and quickly fell in love with the rugged, untamed nature of the area's Gulf coast," says travel photographer Fikry Botros (fbotros.com). "It is a paradise for bird and wildlife photographers."

One of his favorite haunts along the 600-mile coastline: Galveston Island, about an hour south of Houston. Botros suggests strolling along its picturesque fishing piers. "Pelicans enjoy what fishermen dole out, and it provides a great opportunity to photograph them at very close distances," he says. The piers also make a nice foreground for sunsets. The island's Stewart Beach offers more than 500 bird species, both native and migratory.

The Galveston-Port Bolivar ferry will take you (and your car) to Bolivar Peninsula and its three Audubon sanctuaries. "Once on the peninsula, I drive on the beach, heading east, and make frequent

stops to photograph pelicans, herons, and egrets," he says. The Gilchrist Rollover Pass, connecting the Gulf of Mexico and Galveston Bay, is a favorite fishing spot that attracts a lot of wild birds, he adds.

Back on the mainland, Botros suggests driving south to the Brazoria National Wildlife Refuge (east of Angleton), a 44,413-acre wildlife reserve that's home to more than 400 species of birds

**Rob Greebon photographed Rockport Harbor at dawn using a Canon EOS 5D Mark III with a 24-105mm f/4L Canon EF lens. Exposure was 1/13 sec at f/18, ISO 100.**

and 130 species of butterflies and dragonflies. "Take the 7.5-mile Big Slough Auto Tour," says Botros.

For scenic views, Rockport Harbor (shown here) is one of Austin-based photographer Rob Greebon's favorite stops. "I love shooting the boats along the docks on early mornings when the weather is calm and the clouds are sprinkled across the sky," he says.

—Jeff Wignall

## A SHORE THING

**You can explore the Gulf Coast of Texas by starting in Galveston and heading south or in Brownsville and heading north. Here are interesting stops, organized from north to south.**

- **PADRE ISLAND NATIONAL SEASHORE** **North Padre Island.** Talk about beach-combing heaven: This is the longest stretch of undeveloped barrier island in the world. In addition to seascapes, you will find more than 380 species of birds. Most beaches are open to vehicles—but you'll need four-wheel drive. [nps.gov/pais/index.htm](http://nps.gov/pais/index.htm)
- **SOUTH TEXAS BOTANICAL GARDEN AND NATURE CENTER** **8545 South Staples St., Corpus Christi.** A 180-acre nature preserve that includes a rose garden, a wetlands boardwalk trail, and a

hummingbird garden. Bobcats are a common sight, too. Indoor attractions include a greenhouse with 2,000 orchids and a screened-in butterfly house. [stxbot.org](http://stxbot.org)

• **KING RANCH** **2205 Highway 141 West, Kingsville.** Larger than Rhode Island, the ranch is home to 35,000 cattle and more than 200 quarter horses, with a picturesque staff of modern-day cowboys managing them. Specialty tours include nature, wildlife, spring wildflower, and birding excursions. [king-ranch.com](http://king-ranch.com)

• **LAGUNA ATASCOSA NATIONAL WILDLIFE REFUGE** **22688 Buena Vista Blvd., Los Fresnos.** Resident critters include osprey, sandhill cranes, snow geese, deer, nilgai antelope, bobcat, coyote, javelina, Texas tortoise, American alligator—and more than 130 species of butterfly. Watch out for the rattlesnakes! **Visitor Center: 956-748-3607**



HOW \* LIGHTING



# Mood Light

Evoked the look of late afternoon

**FOR THIS** tasty tabletop scene, Kyle Dreier placed his single light source as low as possible, creating a romantic, moody light that strafed over his subjects and produced long shadows typical of the late afternoon. These shadows create a sense of depth in the image and help define the

shape of his subjects, a quartet of rustic tarts and their ingredients.

"I like pushing the angle of lighting to exaggerate depth. I love late afternoons, when the sun is nearly on the horizon and lends a dramatic look to everything it touches," says the Nashville-based food specialist.

**For more of this pro's colorful food photos go to his website, [dreier.com](http://dreier.com).**

"Imagine the sun—one single light source—raking across the scene. That's the look we were going for in the studio."

In addition to shape and depth, the technique helped bring out the color and texture of his subjects, giving them an appetizing appeal in the process.

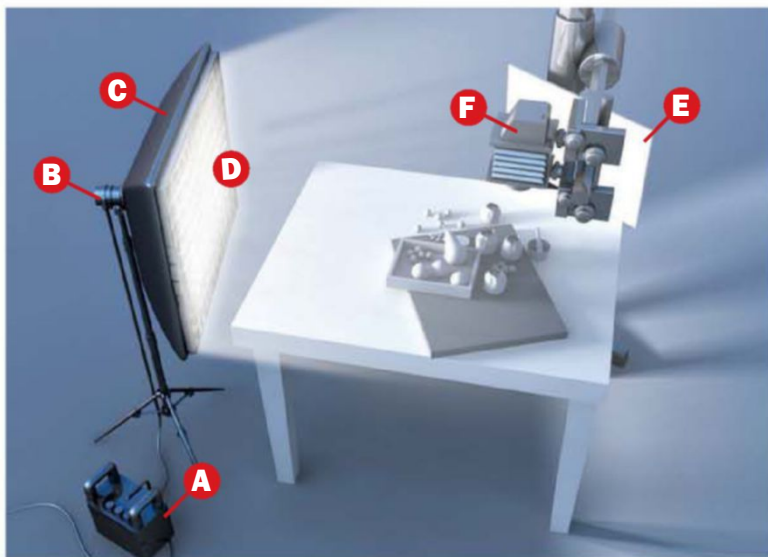
To nail late-afternoon lighting, Dreier often clamps a warming gel over his strobe head. These Color Temperature Orange (CTO) acetate sheets come in a range of sizes and temperatures. "Sometimes I'll alternate





## SIMULATING LATE-DAY LIGHT

SIMPLE  COMPLEX



KRIS HOLLAND/MAFC STUDIOS

To mimic late-afternoon sunlight, Kyle Dreier used a Profoto Acute 2400 powerpack (A) and placed its strobe head (B) very low relative to the subject. His light just skimmed the top of the table. To soften it, he mounted a Chimera Pro Plus softbox (C) to the head, adding a Chimera Lighttools soft egg crate (D) to enhance the light's directional quality. Dreier then filled in the shadows with a white card (E) opposite his main light. He shot with an Arca Swiss M-Line Monolith view camera and Phase One P40+ digital back (F), using a 120mm f/5.6 Schneider Digitar lens. His exposure was 1/125 sec at f/11, ISO 200. "I use this exposure for most of my overhead work. It keeps things simple by locking in as many variables as possible. Usually the only flexible variable is the light output. My assistant knows my camera and lens settings and dials up the strobe power to match," Dreier says.

### THE GEAR



Chimera  
Fabric Egg  
Crate Grid  
(\$150,  
street)

Profoto Acute  
2R 2400 WS  
generator  
(\$2,930,  
street)

Profoto  
Acute 2-D4  
strobe head  
(\$1,049,  
street)

between full, half, and quarter strengths when I'm testing. It depends on the project. The other consideration is the temperature of the fill. I'll try colored fill cards or a fill light with or without a gel to get the right look," says Dreier.

One of the main benefits of mimicking sunlight is that it keeps things simple. Dreier can work with a single light and perhaps a reflector or two. "When you have a single light and use cards to bring up the shadows, it's very easy to control light ratios," he says. The intensity of the fill is

**In addition to its sensitive lighting, the setup is a study in contrasts: square versus round shapes, parallel versus diagonal lines, and warm versus cool tones.**

correlated to the distance between the card and subject. Moving it closer or further away is like using a dial on a strobe to make it brighter or darker.

Dreier warns against opening up the shadows too much, though. They're what gives this still life its evocative feel. "A good buddy of mine once said that [photographers] don't create light—we create shadows. That's a great way to approach a project

like this," says this pro.

Want to capture a similar scene? Dreier recommends drawing on the talents of a pool of friends and associates. "Producing a shot like this is about getting the right team together and then giving serendipity some space to happen on set. It took a food stylist, a prop stylist, a photo assistant, and myself to pull this off," says the photographer.

—Peter Kolonia





AFTER

BEFORE



# Quick & Easy HDR

Extend dynamic range without going to extremes

**EVEN THE MOST** advanced cameras can fail to capture all the detail in high-contrast scenes. The result? Overexposed highlights or underexposed shadows—and sometimes both. Fortunately, HDR (high dynamic range) software such as Unified Color's HDR Express 3 (\$79, direct; unifiedcolor.com) merges

bracketed shots to create a well-exposed image that maintains detail in dark and light areas of the scene.

For this tutorial, I set my camera on a tripod and shot inside the dark interior of a building at Fort Macon State Park in North Carolina, capturing both the inside and the sunny courtyard outside. Bracketing in sets of between five and nine images, I selected a five-bracket series to help lessen

**Nikitas used five JPEGs in HDR Express 3 to create the final HDR image above.**

## QUICK TIP

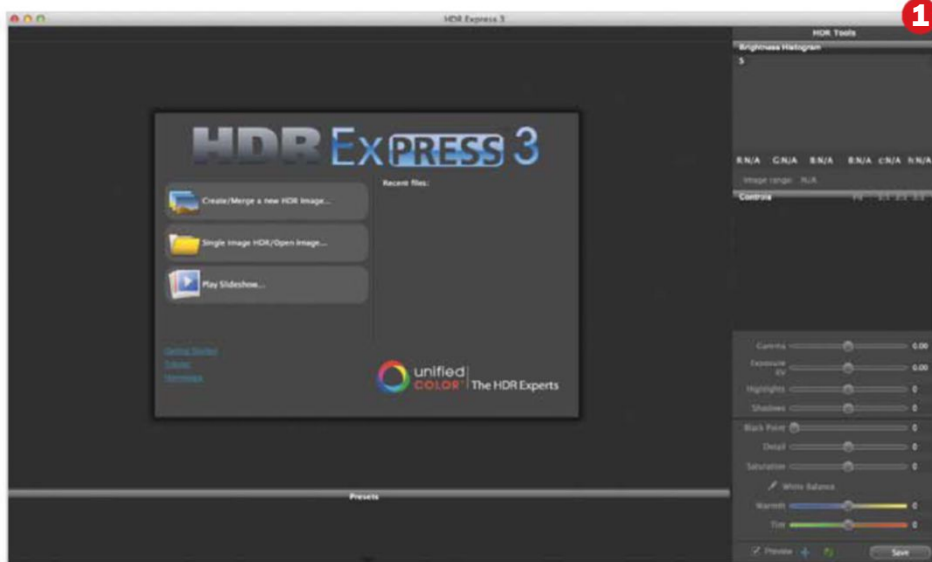
As always when working with new software, go to the preferences menu before you begin. Most important for HDR Express: Click on Export and adjust output settings for JPEG and TIFF formats.

the ghosting effect caused by movement of people at the top of the frame. —**Theano Nikitas**

# Step 1

## Find and open your images.

On the opening screen, click the button labeled Create/Merge a new HDR image. Click Choose to select a source folder, then choose the directory window to open images. On the right panel, select the image format you'll use. This group of images comprises JPEGs, but note that the process works the same with RAW files.



# Step 2

## Get ready to merge.

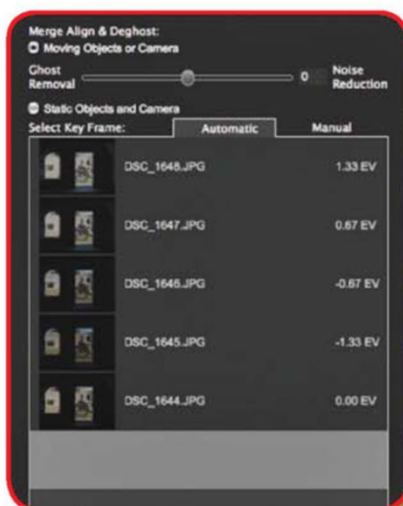
Adjust the Auto-Stack slider at the bottom of the window to ensure that all bracketed images in a series are in a single group. The automatic stacking function works well, but use Manual if you want to add or subtract individual images from the set. If you captured movement from people, tree branches, water, or handheld camera shake, go under Merge Align & Deghost, and choose Moving Objects or Camera. If you used a tripod or there's no subject motion, choose Static Objects and Camera.



# Step 3

## Select a key frame.

Choose Automatic or Manual Key Frame selection. In automatic mode, the software selects the key frame—usually the one shot at 0 EV. To avoid ghosting, the software will choose a single frame to represent a moving subject. If it's a handheld shot or moving subjects are present, set it to manual. Pick the thumbnail (at 0 or -EV) with the best details and composition of the moving object. Once a key frame is selected (auto or manual), double-click on the row of images to merge. Automatic key framing worked well for me most of the time.



**Manual vs. Auto** HDR Express 3 bases its deghosting on a key frame. Letting the software select it in auto mode (left) often works well; manual mode shows you a preview (below).





## Step 4

### Merge your files.

Click the blue Merge button at the bottom right of the interface. Once the images are merged, make sure the Preview box at the bottom of the panel is checked. Click once on the main window to zoom in, and make sure there's no ghosting on moving objects. If ghosting remains, change your settings and merge again. To do so, go to: File > Merge to HDR, make sure that Moving Objects or Camera is selected, and move the Ghosting slider to the left to make its effect stronger.

## Step 5

### Make your image sing.

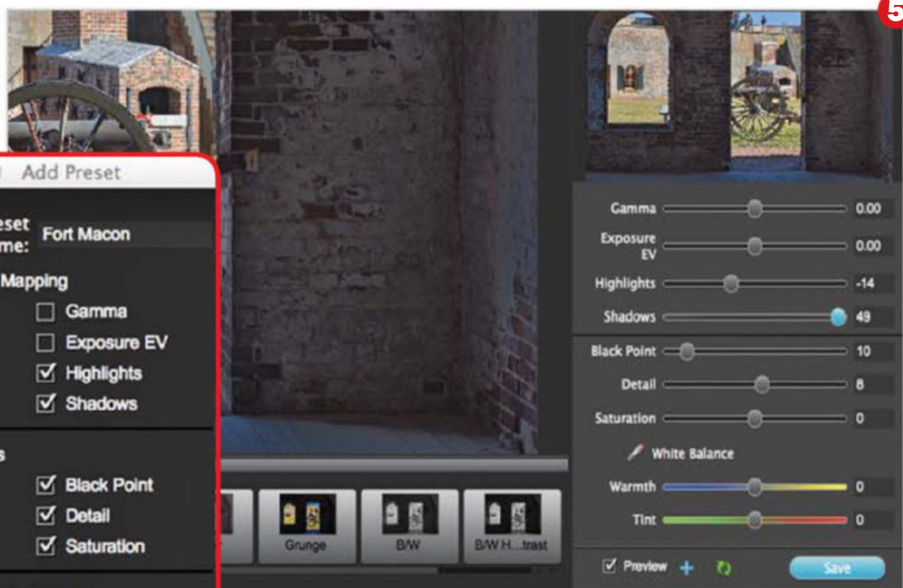
Now comes the fun part: adjusting the sliders to find the right balance of highlights and shadows. To see if shadows or highlights are getting clipped, click the S and the H in the Histogram window. You can choose a preset to get started (click Reset in the film strip to revert to the original image). For this image, I selected the Open Shadows preset, then further lightened the interior by moving the Shadows slider to the right. I moved the Highlights slider to the left to reduce the brightness outdoors and sparingly tweaked the Detail slider for a crisper image.

**Add Preset:** Click the plus sign next to Preview to create and save a custom preset based on your current image.

## Final Step

### Save your image.

Click the blue Save button on the bottom right-hand side of the screen. An HDR prefix will automatically be applied to your image's filename to differentiate it from the single frame of the same name. Use the dropdown menu to select a file format (I chose TIFF). Then click Save to finish the process.







At the heart of the image.

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# GOING UP

Shoot your next group from above

KATRIN KORFMANN/WEN JI QI WU, 2014/ARS, NYC 2015, COURTESY OF KOPEIKIN GALLERY, LOS ANGELES

**DID YOU RECEIVE** a drone for the holidays and after a few exhilarating weeks run out of things to photograph? Get a copy of Katrin Korfmann's amazing book *Ensembles Assembled* (onomatopee.net; \$35, direct). In it, this German-born, Amsterdam-residing fine art photographer presents dozens of group portraits, all shot, like the

Chinese dancers shown here, from a bird's-eye view.

Korfmann (katrinkorfmann.com) captures her groups by shooting from drones, cranes, balconies, and high-rise windows. Her pictures engage by presenting a visual tease. Are her subjects walking, dancing, or in a tomato fight? Is it a multiple exposure of one person or a group





## THE GEAR



Korfmann photographed these dancers with a Canon EOS 5D Mark III (A) and 70–200mm f/4L Canon EF zoom (B).

## Step 1

**Find good backgrounds.** Since the ground underneath your subjects will function as the background of your image, it's an important factor to consider when choosing your location. Look for clean, strong patterns (like the paving stones here) or a solid color. "If the flooring is evenly toned, the viewer's focus will stay on your subjects," says Korfmann. Your background should also be level and parallel to the camera position.

## Step 2

**Choose a good perch.** "Look for a high building with windows that open or a bridge that lets you look straight down," she says. If you can't avoid shadows from surrounding buildings, plan to shoot on a cloudy day with consistently soft shadows.

## Step 3

**Prep your subjects.** For organized group portraits like the Chinese dance company shown here, coordinate wardrobe and choreography in advance. Work with assistants on the ground whom you can instruct from above via cell phone.

## Step 4

**Lock down your camera.** For composited shots, lock your camera on a tripod and don't change position between exposures. When making exposures, mix long and short shutter speeds. "The sharp and blurred images will make for more dynamic photographs," says Korfmann.

## Step 5

**Fill the space.** For composited images, note as you shoot where the subjects are on your background. Try to capture subjects across most of that canvas, leaving no holes or gaps that could frustrate you later during the compositing process.

identically costumed? Also, seen as a massive, wall-spanning print, the image's graphic energy grabs your eye and won't let go.

Want to try it yourself? Korfmann offers these tips:

• **Get the right gear.** Use a sharp, flexible zoom that delivers high-resolution images that can handle large-scale reproduction.

• **Find the right location.** "Look for big squares and open spaces that, for the part of the day when you're shooting, are free of shadows," says Korfmann.

• **Learn digital compositing.** For many of her images, Korfmann first photographs just the background, and then composites her subjects on it. —**Peter Kolonia**

The dance shown here incorporated the Chinese characters for wealth and happiness.



# 5 COLOR SECRETS

Color is so integral to most pictures that sometimes we forget to use it creatively. But as with light and composition, you can use color as a tool—artfully and with purpose. Want to give it a shot? Here are five tips for wielding color to create amazing nature photographs.

*Text and photos by Ian Plant*





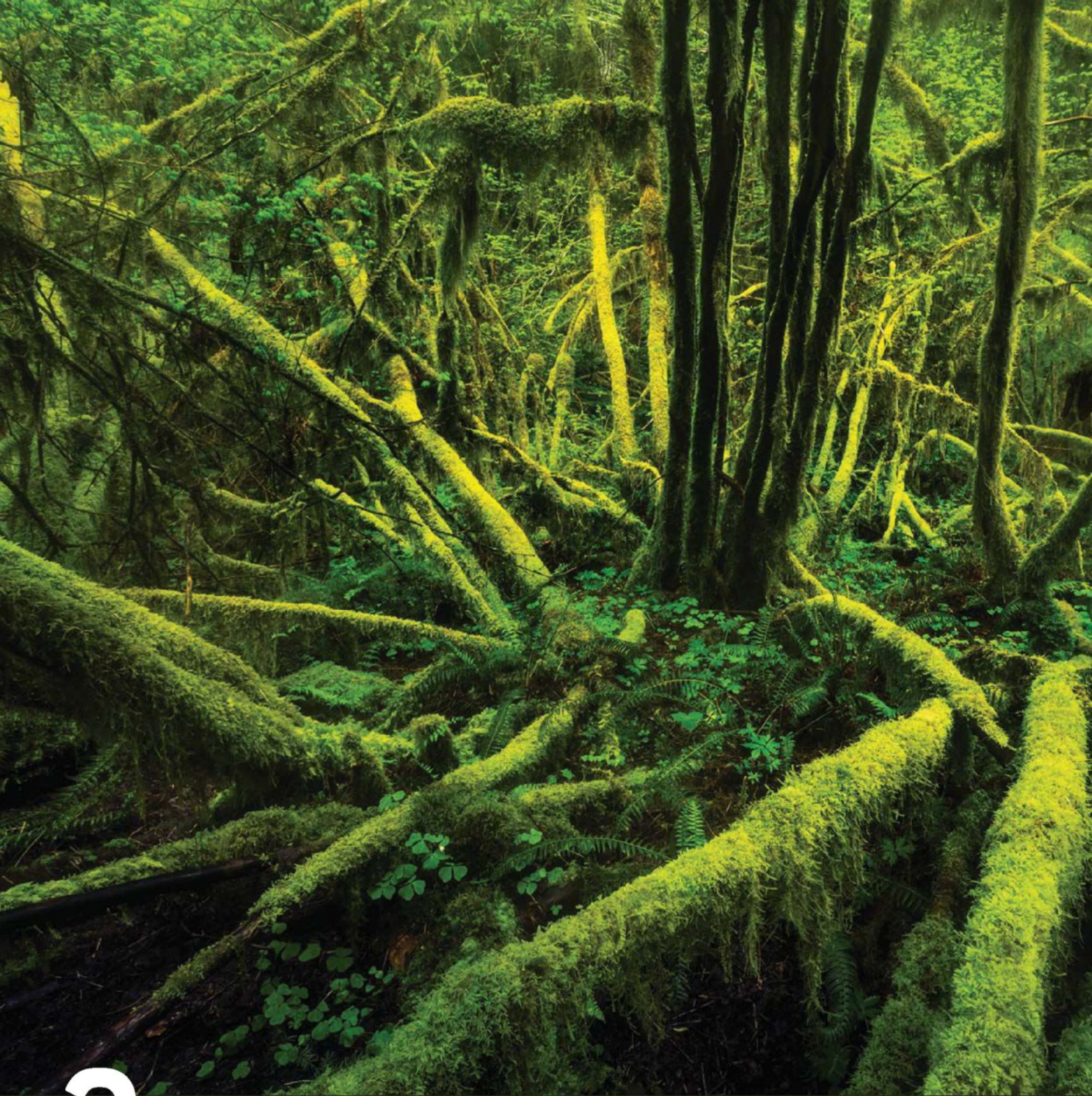
# 1

## Use color to draw the eye.

Color is usually the first thing that viewers notice. You can use this immediate response to lead the eye to important parts of the scene. One sure way: Place a bold splash of color in an otherwise relatively colorless scene. (Just be sure to place it for optimal composition.) Another technique? Use the interaction of colors to both define forms and create energy. Juxtaposing two different colors will create a visual relationship that immediately attracts attention, as with this photograph of the desert slowly reclaiming an abandoned mining town in Namibia. Morning light illuminated the far rooms, which were painted different colors; the bright contrasting colors immediately attract the viewer's eye and draw it deep into the composition. The bold perspective lines leading from foreground to background seal the deal.

**TECH INFO:** Canon EOS 5D Mark III with 16-35mm f/2.8L Canon EF II USM lens; 1 sec at f/11, ISO 100.





# 2

## Drop a color bomb.

Sometimes bold, over-the-top—even aggressive—color is the way to go. And I'm not just talking about pushing the saturation slider, which can lead to photos that look garish or unnatural. Instead, I mean shooting subjects in lighting conditions that are natu-

rally filled with in-your-face color. Dramatic sunrises and sunsets are good examples of situations where the light itself creates bold color. If conditions are right, just before the sun rises (or just after it sets), clouds in the sky will glow with fiery reds and oranges; when the sun is above the horizon and unobstructed by clouds or haze, it

can illuminate the landscape with a colorful light. At sunrise or sunset, a graduated neutral density filter can help you tame the bright exposure of the sky, keeping the colors from getting washed out. Some subjects are extremely colorful to begin with, such as spring and autumn foliage. For this spring rain forest photo from Olympic National Park,





I used a polarizing filter. Because the filter reduces reflections and glare, it intensifies the colors of the foliage to let its native color shine through—turning this image into a (beautiful) green assault on the senses. **TECH INFO:** Canon EOS 5D Mark III with 16–35mm f/2.8L II Canon EF USM lens and polarizer filter; 6 sec at f/11, ISO 100.



### 3

#### Cool it down for tranquility.

A photograph's color can have a profound impact on the emotional response it triggers. While warm colors (red and yellow) often signal excitement and energy, many times I prefer to work with cooler ones (blue and cyan) to communicate a peaceful and tranquil mood. Blue is easy to find in nature, especially because most of the atmosphere around us is blue. Blue light becomes prominent when the sun isn't acting as the primary light source, such as when it is overcast, during twilight, or when your subject is in open shade on a sunny day. With the photo above (top), taken high over the shore of Lake Superior, I stayed until twilight to capture the soothing pastel hues of dusk. And for this photo of a mother



polar bear and her cub in the Arctic National Wildlife Refuge, dark clouds in the background and the snow are rendered with a blue tone because the primary light source for both is light reflecting off the blue sky above. The cool blues create a pleasing color palette, especially when juxtaposed against the yellow-white fur of the bears.

**TECH INFO:** Lake Superior shot with a Canon EOS 5D Mark III and 15–30mm f/2.8 Tamron SP Di VC USD lens; 1/40 sec at f/8, ISO 400. The bears were taken with the same camera, this time mounted with a 200–400mm f/4L Canon IS USM EXT lens; 1/500 sec at f/6.3, ISO 2000.





## 4 Get creative with white balance.

We think of apples as being red, but change the color of the light and the color of the apple can change, too. Can't control the light to get the color you want? Control your white balance setting instead. After all, there's usually no reason to stay 100-percent faithful to the colors of a given scene, and there's no reason to stay faithful to the white balance settings chosen by your camera when

shooting. Remember, you can change your white balance during the RAW conversion process without reducing image quality, so there's no need to make white balance decisions in the field. In the photo above of starfish on a rock in Olympic National Park, cloudy skies meant that the scene was illuminated by mostly blue light. During conversion, I set a white balance that retained the blue tone (the resulting WB was close to the Daylight preset). And for the photo below of a foggy morning in Yellowstone National Park, I warmed the white balance considerably, moving the color tem-

perature from 5500K (chosen by my camera using Auto White Balance) to 9400K for a sepia-toned look.

**TECH INFO:** Starfish captured with a Canon EOS 5D Mark III and 24–70mm f/2.8L II Canon EF USM lens with polarizer; 0.3 sec at f/11, ISO 100. Forest shot with a 5D Mark II and 100–400mm f/4.5–5.6L Canon EF IS USM lens; 1/400 sec at f/16, ISO 100.



## 5 Employ complementary colors to make pictures pop.

Think for a moment of a color wheel (or just look one up on the Internet). Colors opposite each other on the wheel—such as red and cyan, yellow and blue, and magenta and green—are complementary. When juxtaposed, complementary colors make each other more vivid and can create powerful visual effects. Artists and photographers have been using these pairs, such as the ones seen in the reds and blues in this image taken in the Virgin Mountains of Nevada, for centuries. And you don't need to pick colors that are exact opposites; a pairing of cool and warm tones is usually enough.

There are generally three ways to achieve a complementary color scheme. First, you can juxtapose subjects that naturally have complementary colors (such as yellow flowers and a blue sky). Second, you can use creative white balance to enhance complementary color contrast. The starfish image at top left is an example—by cooling the image overall, I was able to render the water with a blue tone, which, when seen against the orange starfish, creates a complementary color scheme. If I had not done so, the water would have been white. Last, you can shoot in mixed lighting. For an easy mixed light scenario, find a composition where parts will be sunlit and other parts will be in shade and lit by light reflected from the blue sky above—that will create a warm/cool scheme. **TECH INFO:** Canon EOS 5D Mark III and 15–30mm f/2.8 Tamron SP Di VC USD lens; 1/20 sec at f/13, ISO 100. ○







# BUILDING PHOTOS

As humans, and as photographers, we're drawn to structures. Cloud-kissing skyscrapers, simple suburban houses, cathedrals, ramshackle garden sheds—any kind of structure can make a great subject. Here, four masters of the genre explain how to make your architectural photographs soar. **By Dan Richards**

**"IT'S WHAT** makes us human," says Adrian Gaut of our fascination with making pictures of our structures, "the ability to transcend the environment."

Gaut, a New York City-based commercial pro, whose images appear on pages 52 and 53, represents a breed of architectural photographers who make pictures not primarily for a design firm, but as part of larger projects or personal work.

Such artists combine their literal representations of buildings with an overlay of metaphor. As Christopher Griffith, also based in New York, puts it, photographing architecture is "a testament to the idea, the sensation, that it's even possible to build these kinds of things—the sort of awe that human beings have at the ability to create [them]."

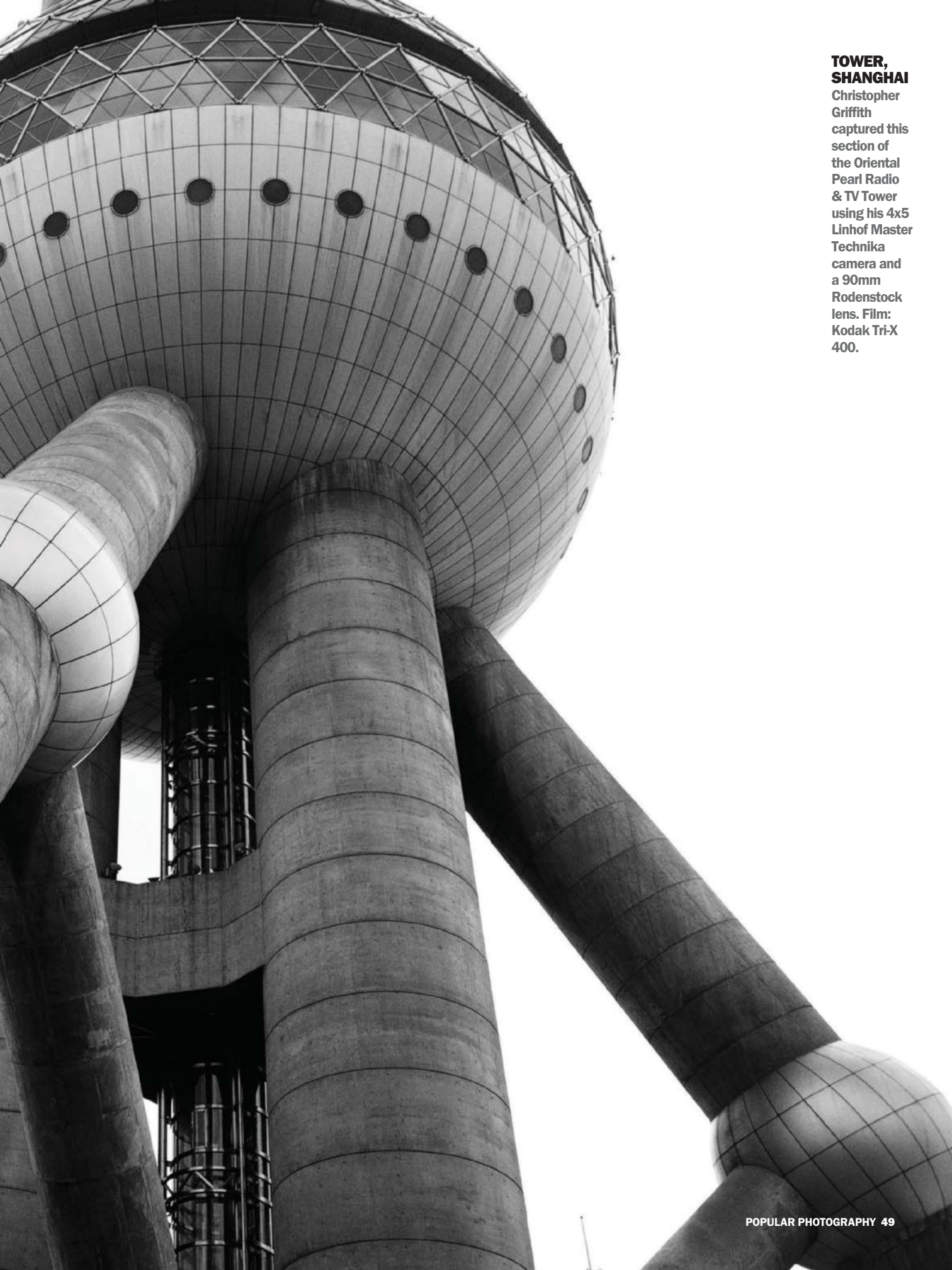
Anyone who feels this awe can learn to express it in photographs.

## DEVELOPING A STYLE

Your point of view, both in terms of where you set your camera and what the structure means to you, will be a defining feature of your architectural photographs. Shoot to find out what you are drawn to, and go from there.

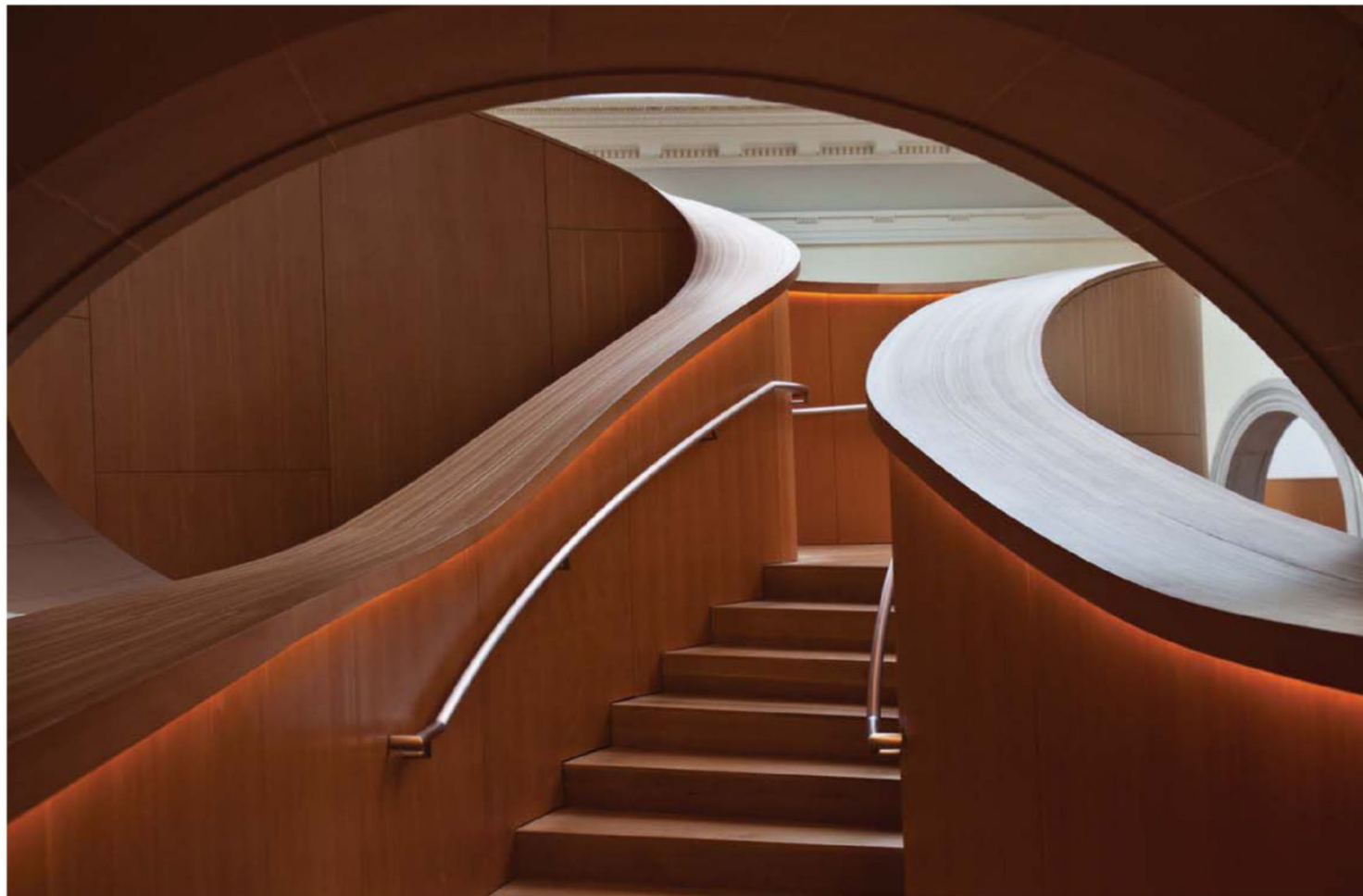
Gaut's style, for example, is dominated by angles and a closer perspective than is typically seen in architectural photography—a characteristic born of necessity. He had purchased a used 4x5 rig on eBay that he thought came with a 90mm lens (extra-wide on this





**TOWER,  
SHANGHAI**  
Christopher  
Griffith  
captured this  
section of  
the Oriental  
Pearl Radio  
& TV Tower  
using his 4x5  
Linhof Master  
Technika  
camera and  
a 90mm  
Rodenstock  
lens. Film:  
Kodak Tri-X  
400.





large-format camera), but in fact was outfitted with a 210mm (short telephoto) lens. “At the time I couldn’t afford to buy other lenses,” he says. “So I started shooting with the longer lens and found I was able to get something more unique, and more consistent with my vision of architecture. It also allowed me to shoot buildings that I considered not necessarily interesting as a whole—but [whose details] held a lot of potential. Once I could afford more lenses, I still felt connected with that way of working.”

If Gaut is all about angles, Ashok Sinha, another New York-based photographer, is all about curves. His picture of the staircase in the Frank Gehry-designed Art Gallery of Ontario in Toronto is above. “I find a curve to be a strong visual element, especially for architecture, where everything is [usually] very straight. It adds a bit of flavor to the pictures—it makes them pop.”

**GEHRY STAIRCASE**  
Ashok Sinha captured these curves, above, using a Canon EOS 5D Mark II and 16–35mm f/2.8L Canon EF lens. Exposure was 1/30 sec at f/4, ISO 320.

Griffith, in the meantime, focuses on repeating patterns, as can be seen in his shot of the Shanghai Grand Theatre at right.

Matthias Haker, a Dresden-based commercial photographer, is clearly drawn to spirals and tubes, as can be seen in his photo of a station in the London underground on the facing page. “I’m fascinated by spiral staircases,” he says. “It’s a typical situation that I photograph a spiral staircase in some office building. . . and as the people who work there see me lying on the floor, they start to look up and actually realize how beautiful it [is]—even though they’re used to seeing it every day.”

The lesson? Think about what visual elements in the built environment most draw your own eye, and frame the scene in a way that brings these elements to the forefront.

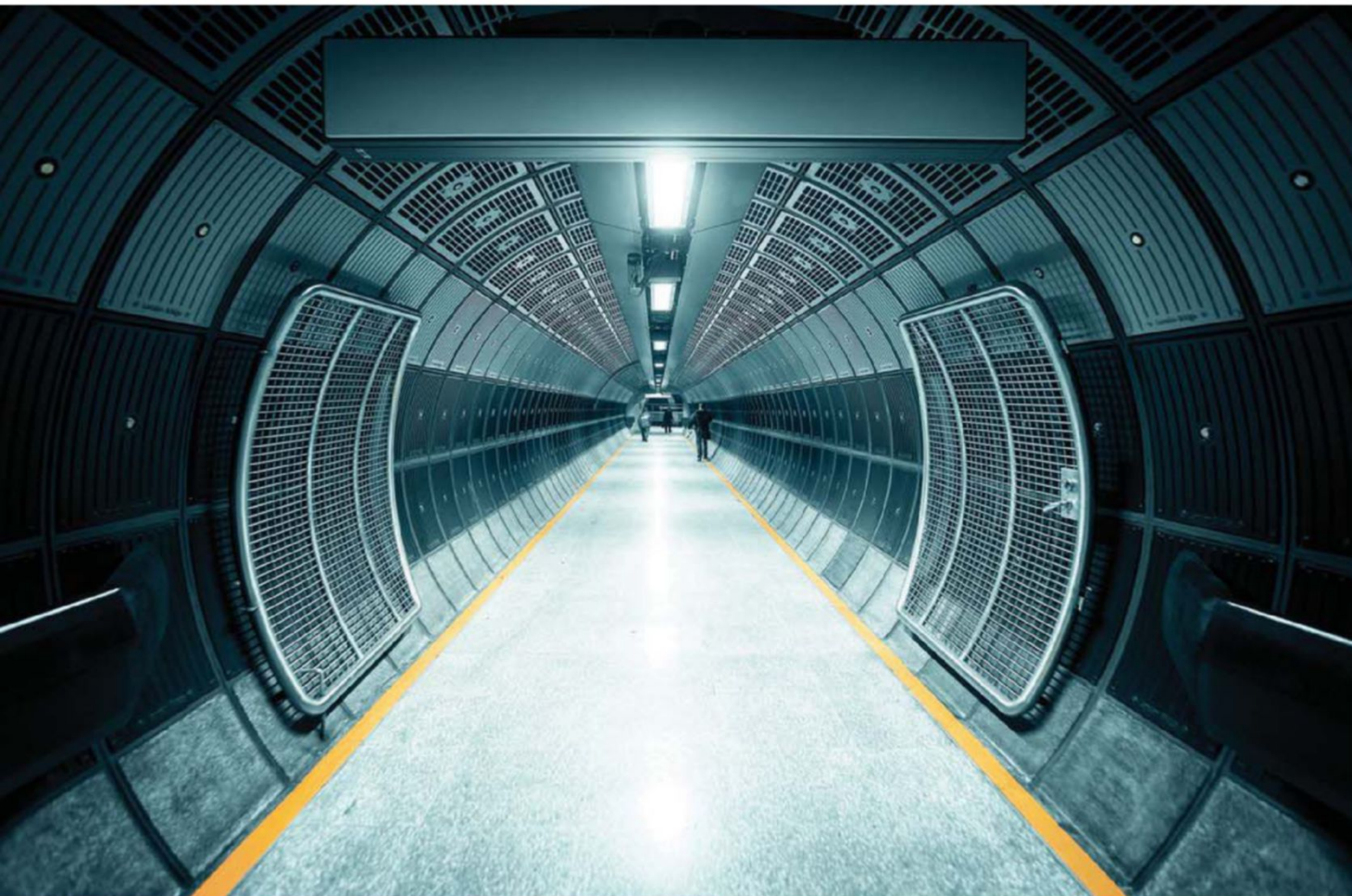
## FINDING SUBJECTS

Identifying structures to photograph is “a mixture of serendipity and some planning,” Gaut says. “I travel a lot, and sometimes I’ll have a list of things that look interesting, sometimes from guidebooks. Sometimes I’ll file subjects away for future trips, but I’ve always got my eyes open.” His advice: Take a look at the building next to the one you were interested in. “Sometimes flagship buildings by major architects are less interesting than the ones that don’t get the press.”

For the image above, Sinha had a free day in Toronto on a commercial shoot, so he headed out. “I always love going to art galleries. The Art Gallery of Toronto is not only known for the collections but the architecture in general. And I had always wanted to see Gehry’s staircases.”

Like these two photographers,





## **LONDON TUBE**

**Matthias Haker** went underground for the image above. **Sony A900** and **17-35mm f2.8-f/4** **Konica Minolta AF** lens; exposure **1/10 sec** at **f/3.5**, **ISO 200**.

## **SHANGHAI GRAND THEATRE**

Seats at left by **Christopher Griffith**; shot with a **4x5 Linhof Master Technika** camera, **150mm Rodenstock** lens, and **Kodak Portra 400** film.

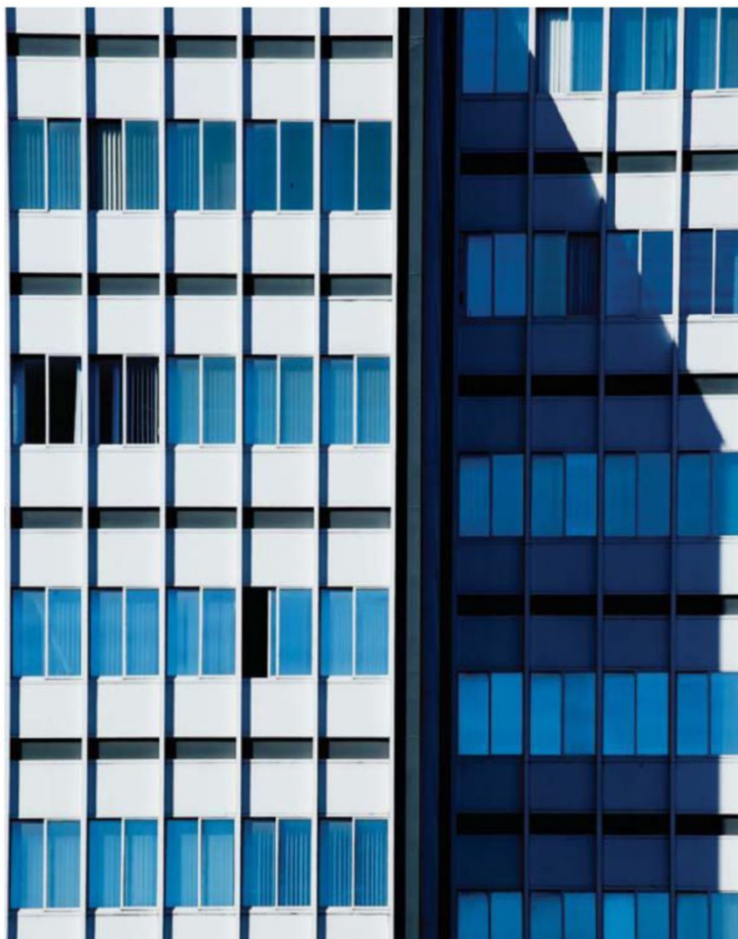
Haker tends to research buildings to photograph for his personal work, which he does on top of commercial assignments. "Before I travel, I spend a lot of time searching online for places of interest," he says. "Photo communities have made that research easy. Besides those, I check books about architecture as well as architectural websites or forums."

But some shooters find subjects without much of a search—you just have to look up. With mundane buildings, the challenge lies in transforming them through photography. "I'm never particularly concerned about the representation of reality," Griffith says. "It's very rare that I look at a building and say, 'I want to be true to how it sits and lives in the environment and the horizon.' I'm much more about how the three-dimensional world fits into a two-dimensional box. I'm always trying to make things look larger than life, more monumental."









## WILSHIRE BLVD.

Adrian Gaut went digital for this image (left) from his series photographing Wilshire Boulevard in Los Angeles, CA. Shot just before his switch to Nikon, with the Canon EOS 5D Mark III and 70–200 f/4L Canon EF lens. Exposure: 1/500 sec at f/18, ISO 400.

## SELECTING GEAR

Because these four photographers are busy pros, they work a wide variety of jobs. And so they have settled on full-frame DSLRs and ILCs, primarily with zoom lenses. Gaut uses the Nikon D810-series cameras; Sinha prefers the Canon EOS 5D series; and Haker is a Sony man, working with Alpha 900, Alpha 7R, and Alpha 99.

“It gives me the right amount of flexibility across a lot of different jobs,” Gaut says of a full-frame DSLR system. “Still life, portraits, aerial—it’s a real boon for me.” For architectural work, he commonly uses a longer-than-expected 70–200mm f/2.8 AF Zoom Nikkor.

Griffith is the outlier of the bunch. For his architectural studies he uses a 4x5 Linhof Master Technika, Rodenstock lenses, and—take a deep breath—film. Architectural work is, he says, “oddly enough, not something that I necessarily

## SALK INSTITUTE

Adrian Gaut used a Pentax 6x7 camera and 75mm f/4.5 Pentax SMC lens to record the building and pattern of repeating light and shadow at left. Film: Kodak Tri-X 320. Exposure: 1/500 sec at f/16.

make a living at. I do it for myself. There’s no crew, there’s no producer; it’s you and a 4x5 camera. It lets you get back to a solitary way of shooting.”

While for most of his commercial work, he’s all digital (Nikon D800 and D810s and a Hasselblad H4 with Leaf back), for personal work he likes shooting with film because, he says, it “forces you to make decisions. I can shoot everything under the sun if I shoot digital. With film, I’ll shoot two or three things and I’m done.” Griffith does make one concession to speed—he uses a Linhof viewfinder, similar to cinematographers’ framing optics, to establish starting compositions.

## MAKING DECISIONS

None of our four shooters are equipment-obsessive. As with most types of photography, making a great architectural image depends not on the subject

or the gear you shoot it with but on the decisions you make while shooting. For that, these pros offer some nuggets of wisdom.

“Work with the equipment that you have, the equipment you’re comfortable with, and find an approach that works for you—in my case, shooting with longer lenses,” says Gaut.

Sinha urges you to pay attention to light. “I’m always observing light,” he says. “I am always making notes about light and looking at the shadows.” And don’t shy away from backlight. As he points out in his picture of the Frank Gehry staircase, the backlight coming from the ceiling and glinting off the wooden banisters defines the form.

Griffith has an unusual piece of advice: Shoot less. During a location still-life workshop he led, he directed participants to limit the number of pictures they would take in any given session to 50 clicks. As everyone was shooting digital, he relied on the honor system. “It’s like having 50 sheets of film,” he says. “That kind of discipline, and those kinds of exercises, really force you to home in on not the picture that you can take, but the picture that you want to take. The problem [with digital] is that it doesn’t hone your eye. I’m guilty of this as well. I’ll be shooting a commercial job, and after a day I’ll have shot 800 to a thousand pictures—how the hell did I shoot that many? This is not an anti-digital argument at all. It’s purely the exercise of patience, the patience of taking photographs and forcing yourself to really make decisions.”

“You don’t need amazing buildings to make interesting pictures,” adds Gaut. “The big lesson is to work with what you have and go from there. You can take a great picture with a so-so lens—if you’ve got the vision.”





## SPINLIGHT 360

- **PHOTOGRAPHER/INVENTOR:** Yishai Shapir
- **VICE PRESIDENT:** Lisa Shapir
- **CONCEPT:** Modular modifier system for flashguns
- **LAUNCHED:** 2012
- **CURRENT PRODUCTS:** Bounce cards, domes, gels, ring module, and more
- **FUN FACT:** They saved about 30 percent by being intimately involved with the engineering. One of the draftsmen later became a photographer and major SpinLight advocate.
- **MORE INFO:** [spinlight360.com](http://spinlight360.com)

*Photo by Ashok Sinha*



# FROM Photographer TO Inventor

**Got a brilliant idea?  
Here's how five shooters  
brought their visions to  
market, and how you can  
do it, too. *By Theano Nikitas***

**THERE'S TRUTH IN** the adage that necessity is the mother of invention. Some of the most popular photography brands and products were created by photographers trying to solve a problem or achieve a certain look. And there's no reason your own gadget or new tech can't be among them.

Got an idea? Start with a prototype. A functioning model will help you see what works and get feedback from other photographers. Photojournalist David Honl needed a portable lighting solution, so he began sewing his own light modifiers. If your product has merit, your testers may become your first customers. "I had no intention of selling these," Honl says of his first products. After he started handing out samples, he says, "I decided to make more."

Starting with prototypes also allows you to invent using what you have. Photographer Craig Strong wanted to bend light, so he bought optics on eBay and combined them with vacuum cleaner hoses to create the first

Lensbabies. Film director and cinematographer Ben Mesker brought sheets of plywood into his workshop to make the first Jokerboxes, versatile tool containers and carriers for photographers, technicians, grips, and stylists.

Soon, he says, "fellow camera-men and production companies would ask me to make them a set," affirming that his homemade invention had value beyond his personal use.

## **Gear Meets World**

Getting your new product out of your workshop and into the world requires forethought, from branding and marketing to protecting your work. Commercial success starts with the name, and there's more to branding than coming up with one. Given the importance of the Internet, make sure that a Twitter handle, web domain, and Facebook page are available for the name you choose.

After that, if you can, trademark the name and register a patent for your invention. The day

## **LENSBABY**

- **PHOTOGRAPHER/INVENTOR:** Craig Strong
- **CONCEPT:** Selective-focus lenses that deliver creative blur effects surrounding a sweet spot of focus
- **LAUNCHED:** 2004
- **CURRENT PRODUCTS:** Circular fisheye, tilt effects, 35mm, 50mm, and 80mm options, and more for SLRs, DSLRs, and ILCs, plus a new lens for mobile devices
- **FUN FACT:** Sold out inventory at WPPI 2004, even after assembling additional units by hand in the hotel room. By the third day, 20 people were lined up at the Lensbaby booth waiting to buy this unconventional lens.
- **MORE INFO:** [lensbaby.com](http://lensbaby.com)







## JOKERBOXES

- **PHOTOGRAPHER/INVENTOR:** Ben Mesker
- **CONCEPT:** A trio of multi-function wooden boxes for photographers, technicians, grips, and stylists to organize, access, and transport the tools of their trade
- **LAUNCHED:** 2012
- **CURRENT PRODUCTS:** Boxes, plus lids and trays for customization
- **FUN FACT:** "If I made 10, I sold 12," Mesker says. But by outsourcing production, Jokerboxes are now readily available. New designs and accessories are coming too.
- **MORE INFO:** [jokerboxes.com](http://jokerboxes.com)

after Yishai Shapir sketched out his idea for the SpinLight 360, he went to a patent attorney to check for similar designs. "I wanted to make sure I was not infringing on any of them," he says. Though it's not cheap, Haje Jan Kamps, inventor of Triggertrap, recommends getting professional help.

Early on, Honl didn't patent any of his designs. Instead, he concentrated on developing his brand and trademarked his name and the names of his products. "My brand is important, my name [as a working photographer] is worth something," Honl explains, "so I focused more on the trademarking than on patents." The direct result of not patenting his products is that you'll find "cheap knockoffs" of some of his products in camera stores. Now, says Honl, "If I have a very unique product [such as the Traveller8 Softbox], I will patent it." But, he cautions, "it could end up costing upwards of \$30,000 by the time you're finished with everything"

## Starting Small, Scaling Up

Building a product by hand is one thing; mass producing it is another. Finding the right engineering firm and manufacturer—or suppliers who are willing to work with a small company—takes time, but the right partners can help you tweak your design and suggest materials and production processes. Shapir interviewed several engineering firms until he found one that grasped his concept. "I wasn't familiar with what materials to use," he says. But he knew what conditions his product had to meet. The same firm recommended a manufacturer for the SpinLight 360.

Contractors and suppliers may not be interested in a microbusiness, but persistence and clever thinking will take you far. For his wooden Jokerboxes, Mesker says, he needed "precise, repeatable parts. Most big shops didn't want to deal

with a little guy like me, and most small shops couldn't give me the quality of cut I needed." In the end, he found a sign shop who could do the job. The lesson? Don't stick with the obvious options.

Equipped with gaffer tape and shop vac hoses that he used to make his early Lensbabies, Strong went to local suppliers who, he recalls, "looked at me cross-eyed." But, like Mesker, he didn't give up. He found a shop whose business was a little slow at the time, and decided to take a chance on his product. Like Shapir and other photographers, Strong didn't understand engineering. He relied on the shop to help him make a final manufacturable design. Contractors, Honl points out, "may not be photographers, but

## TRIGGERTRAP

- **PHOTOGRAPHER/INVENTOR:** Haje Jan Kamps
- **CONCEPT:** A remote laser camera trigger for use with mobile iOS and Android apps. It can also be triggered by sound, light, and passive infrared. Perfect for time-lapse photography.
- **LAUNCHED:** 2011 (Kickstarter)
- **CURRENT PRODUCTS:** Kits available for 15 camera brands, including Kodak, Lytro, Minolta, and Leica; recently announced Triggertrap Ada for high-speed photography
- **FUN FACT:** Kamps's first Kickstarter campaign received three times the funding he requested. Triggertrap's most recent Kickstarter, for the Triggertrap Ada, was fully funded in less than 12 hours.
- **MORE INFO:** [triggertrap.com](http://triggertrap.com)



## HONL PHOTO

- **PHOTOGRAPHER/INVENTOR:** David Honl
- **CONCEPT:** Compact and lightweight flash modifiers great for travel and on location
- **LAUNCHED:** 2007
- **CURRENT PRODUCTS:** Flash and bounce reflectors, speed grid, softbox
- **FUN FACT:** Honl turned a profit early on by keeping overhead low. He fulfills Internet orders himself when he can and includes a personal note with each.
- **MORE INFO:** honlphoto.com



they can give you recommendations and become real partners.”

Regardless of what your manufacturing partner may encourage you to do, start out small. A contractor may offer a per-piece discount for larger orders or have a minimum for each production run—avoid this. As a new company, you may not know how many products you can sell,

and excess inventory can lead to financial disaster. “What if nobody wants it?” Kamps says. “Maybe there’s a reason there’s no other product like it on the market.” Honl, whose business turned a profit in a short time, says, “I made the choice early on to make only

as much as I could sell.” He still produces only 100 units at a time.

Staying small also gives you leeway for improvement. A new product may have unexpected issues. Or you may make it better. If you have a huge inventory, it would be too costly to change the product and you would have to leave it “as is” until you manage to sell down your stockpile.

## More Marketing

Marketing goes into full swing when you start making and selling your wares. Social media provides lots of forums for free advertising: Blog, use that Facebook page and Twitter handle you acquired when researching trademarks. Create videos, post images—whatever calls attention to your invention.

Get photographers and journalists to review samples. Shapir was approached by a blogger at New York’s Photo Plus Expo who asked to be the first to write about the SpinLight. This past year, says Shapir, his booth was packed.

Creating a product and bringing it to market may not be the easiest journey. The SpinLight, Shapir says, was born from necessity and frustration.

But, he adds, “Sometimes you launch into something and you don’t care if the odds are against you. I felt like I just had to do it.”





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TESTS: EPSON SURECOLOR P600 & ROKINON 50MM F/1.4 AS IF UMC

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TEST: CANON EFS 24MM F/2.8 STM

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ILC TEST

## A STABLE CAMERA

**Adding five-axis image stabilization to a full-frame ILC**

WHEN SONY launched its interchangeable-lens compacts in 2010, the company changed its approach to image stabilization. Instead of the sensor-based system used in its Alpha-series DSLRs, it built optical stabilization into its ILC lenses. But Sony hardly abandoned sensor-based IS—in fact, it kept innovating, creating the first stabilization system for full-frame image sensors, which it debuted in the a99. Now, with the a7 II, Sony introduces a new full-frame sensor-based five-axis stabilization system that can operate on its own or work in conjunction with the optical stabilization in some lenses.

We were quite impressed with the results, as well as the other changes Sony made to this popular camera. Though it still bears a striking resemblance to the other Alpha-

**SONY  
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a7 II**

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5-axis sensor-  
based image  
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series ILCs, the a7 II (\$1,698, street, body only) required an extensive redesign to add the floating sensor capabilities. Along with this came a more prominent grip with better ergonomics for the shutter release and front command wheel. Likewise, Sony beefed up the lens mount, replacing some of the plastic in the original a7's mount with metal. Plus, it enhanced the autofocus with better tracking capabilities and new algorithms for speedier focusing. Video capture also steps up to the XAVC S codec, allowing 1920x1080p60 capture at up to 50 Mbps. We were eager to run the new camera through the Popular Photography Test Lab and our usual rigorous field testing.

### In the Test Lab

Sony's a7 II achieved an Excellent rating in overall image quality from ISO 50 through ISO 1600. To arrive at that result, however, we did veer slightly off of our normal testing procedure. We normally test TIFFs converted from RAW files using the conversion software that ships with the camera, but we couldn't do that here because of a software bug (we encountered the problem while testing the A77 II last fall and it has not yet been resolved). Since Adobe Photoshop Lightroom 5.7.1 and Camera Raw 8.7.1 offer official support for this new camera, we used ACR for file conversion and proceeded as we normally do for cameras that ship with Adobe's software. This means we applied 25, 50, and 75

#### SONY ALPHA a7 II

##### WHAT'S HOT

New 5-axis image stabilization

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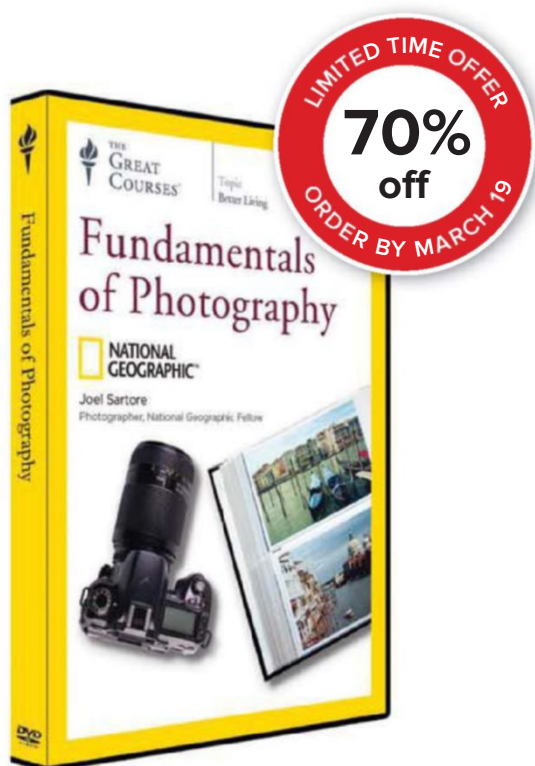
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percent of Adobe's luminance noise reduction and weighed the results against resolution to determine how much reduction to apply at each ISO.

We ended up with 25 percent noise reduction from ISO 50 through 800 and 50 percent from ISO 1600 through 25,600. This leaves plenty of room for additional noise reduction should you feel the need, and it tracks closely to the noise results we saw when using Sony's software for our test of the original a7.

Compared with Samsung's NX1, which does ship with Lightroom 5, the a7 II showed cleaner results at ISO 800 and lower, and very slightly higher numbers at ISO 1600 and above. However, the NX1 ended up with 75 percent noise reduction at those higher ISOs, which, along with the noise still present after reduction, caused the NX1 to score lower resolution numbers than the a7 II at both ISO 12,800 and ISO 25,600.

Speaking of resolving power, the a7 II easily earned an Excellent rating in our resolution test at its lowest sensitivity of ISO 50, where it delivered 2720 lines per picture height. The score slid to a still-healthy 2680 at ISO 400. At ISO 1600, where noise reduction stepped up to 50

percent, the a7 II captured 2575 lines, and only at ISO 6400 did resolution drop to the lowest limit of our Excellent rating at 2500 lines. The camera's top two sensitivities of ISO 12,800 and ISO 25,600 saw 2460 and 2320 lines, respectively, rating Extremely High.

In our color accuracy test, the a7 II earned an Excellent rating with an average Delta E of 5.6. This improves upon the 7.9 that Sony's software delivered with the a7 and beats the NX1's result of 7.5. However, all three of these results are enough for an Excellent rating and should be considered to deliver a wonderful re-creation of color. (We expect that given the persistent popularity of highly saturated color rendition, most photographers will wind up making the color less accurate in their final images than what they see coming straight from the camera.)

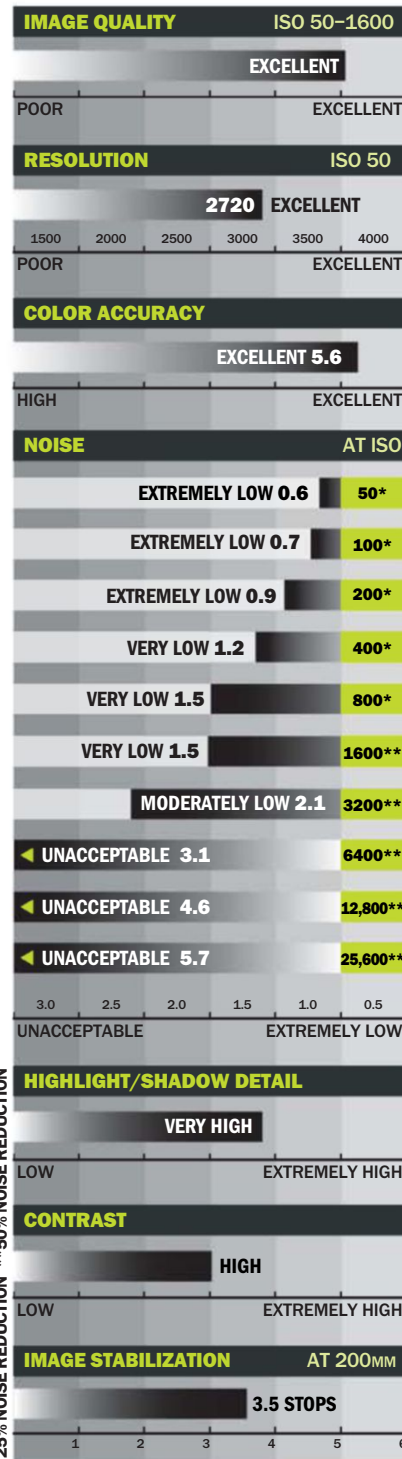
In our image stabilization test, which we conducted using Sony's stabilized FE 70–200mm f/4 G OSS lens zoomed to 200mm, the a7 II averaged 3.5 stops of shutter speed leeway. (We used this lens because it was the only **native FE-mount lens available to us during our testing period** that had such a

**You can learn more about how we test cameras at [PopPhoto.com/reviews](http://PopPhoto.com/reviews).**



SHOWN WITHOUT LENS

## TEST RESULTS



\*25% NOISE REDUCTION \*\*50% NOISE REDUCTION

long focal length.) According to Sony, when a lens with optical stabilization is attached to the a7 II, the camera body works in conjunction with the lens to achieve five-axis image stabilization. So the

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


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
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system used the moving lens elements in the 70–200mm to compensate for motion in pitch and yaw, while the sensor shifted to compensate for lateral and vertical motion as well as for roll. The result was quite impressive, especially considering that this was the debut of a newly designed stabilization system.

## In the Field

The a7 II's redesigned grip is a big improvement over its predecessor's. It not only offers a much more comfortable way to hold the camera, but also positions the shutter release in a significantly better ergonomic position. As on most DSLRs, the new ILC's shutter button is angled slightly downward at the front and is located on top of the grip instead of the main camera body. As such, you don't have to reach awkwardly backward to operate the shutter; instead your index finger lands in a more natural-feeling spot, which should put less strain on your hand. These design improvements make the a7 II more comfortable to use for longer periods.

The control interface remains very similar to that of the a7, but moving the shutter button let Sony add an extra customizable button on top. With two command wheels and ample opportunity to customize the controls to our liking, we had no trouble switching settings on the a7 II while out shooting.

Likewise, the video recording remains basically the same as with the a7, topping out at 1080p at 60fps, though it uses the newer XAVC S codec instead of AVCHD. You can also still use the HDMI jack to send a clean, uncompressed signal to an external recorder.

In our test of the a7 in 2013, we noted its burst rate, a meager 2.5 frames per second, as one area that could be improved. The a7 II boosts that to 5 fps and lets you shoot up to 77 large fine JPEGs, 25 RAW files, or 23 RAW + JPEG frames before the buffer fills. That's fewer than the 31 RAW shots the older model could get per burst, but the a7 II's faster frame rate also means that fewer shots can be cleared from the buffer to the memory card while shooting. Especially for a camera of this size, we'll take 25 frames at 5 fps any day.

Autofocus feels faster than in the a7, and the AF tracked moving subjects well. (The 70–200mm f/4 zoom focused especially fast for a lens spanning this range of focal lengths.) The tracking AF now shows an array of small green squares indicating where in the scene the camera is looking as it adjusts focus. Basically the same method Sony uses in its a6000, it provides a somewhat similar experience to shooting with Nikon's 3D tracking AF. It's reassuring as you shoot to see that the camera is indeed holding its focus on the person or object that you want to track.

Sony's wireless capabilities haven't changed much since the a7. We easily paired the a7 II with a Samsung Galaxy S3 to share photos and let the smartphone control the camera.

## The Bottom Line

If you've been eyeing the original a7 but holding off buying, the a7 II should definitely be your new object of desire. But we're not sure that current a7 owners should run to replace their cameras. If you use tracking AF a lot and really need sensor-based IS, then you might

# SPECIFICATIONS

**IMAGING:** 24.3MP effective, full-frame Exmor CMOS sensor captures images at 6000x4000 pixels with 14 bits/color in RAW mode

**STORAGE:** SD, SDHC, SDXC, Memory Stick PRO Duo, PRO-HG Duo, XC-HG Duo. Stores JPEG, ARW RAW, RAW + JPEG

**VIDEO:** Up to 1920x1080p60 XAVC S/AVCHD v2/MP4; built-in stereo mic, stereo minijack mic input; continuous AF; maximum clip length approximately 29 min 59 sec

**BURST RATE:** Full-sized JPEGs (Fine mode): 5 fps up to 77 shots; RAW (14-bit): 5 fps up to 25 shots when using a UHS-I memory card

**AF SYSTEM:** TTL hybrid phase/contrast detection with 25 selectable contrast focus points, 117 phase detection points. Single-shot and continuous with predictive focus tracking, face detection

**SHUTTER SPEEDS:** 1/8000 to 30 sec (1/3-EV increments); shutter life not rated

**METERING:** TTL metering using 1,200-zone sensor with Multi-segment (evaluative), centerweighted, and spot (size of spot not specified) metering; –1–20 EV (at ISO 100)

**ISO RANGE:** ISO 50–25,600 (in 1/3- or 1-EV increments).

**FLASH:** No built-in flash; Multi Interface shoe accepts accessory flashes

**EVF:** Fixed 0.5-inch eye-level 2,359,296-dot OLED with 3-step brightness adjustment; 100% accurate; 0.71X magnification

**LCD:** Tilting 3-in. LCD screen with 1,228,800-dot resolution; 5-step brightness adjustment

**OUTPUT:** Hi-Speed USB 2.0, micro-HDMI video, stereo headphone minijack

**BATTERY:** Rechargeable NP-FW50 Li-ion, CIPA rating 340 shots

**SIZE/WEIGHT:** 5.0x3.9x2.4 in., 1.3 lb with card and battery

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consider it. Otherwise, you may be better off waiting another year or two for the next update.

However, if you would like to enter the ILC world for the first time, the Sony a7 II certainly belongs on your short list. This new full-framer represents one of the best combinations of small size and high-level performance you can find in a camera today. —Philip Ryan



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# INKJET MAGIC

## EPSON'S NEW 13-INCH PRINTER DAZZLES

**DESKTOP INKJETS** that make photo-quality pigment prints come along rarely. The 13-inch models now on the market have been around for a few years: Canon's Pixma Pro-1 and Pro-10 printers came out in 2013, and Epson's Stylus Photo R2000 is even older. That's just one reason we were glad to see Epson replace its aging Stylus Pro R3000 with the new SureColor P600 (\$800, street).

Not by accident did Epson take the SureColor brand name from its line of professional studio production printers and apply it to this model, aimed more at enthusiasts. Our extensive field testing revealed superb print quality for both color and black-and-white images.

Fans of the R3000 will feel right at home with the P600, which lifts many features from its predecessor,

**Shown here with its top feed and output trays open, the SureColor P600 transforms into a fairly compact box when not in use.**

including the way it loads media, its ink cartridge size, and the number of inks in the set. The SureColor P600 adds wireless capabilities, outputs much longer prints (up to 129 inches, especially good for canvas panoramas), and boasts greater black ink density and color saturation for noticeably better image quality. A new touch-screen control panel contributes to its ease of use.

A step up from the R2000 (which remains on Epson's roster), the P600 swaps black inks for more effective printing on different media, and its cartridges hold more ink—25.9 versus 17 milliliters. And while it falls below Epson's popular Stylus Pro 3880

17-inch printer in the company's lineup, its print quality and speed may make it the better choice if you don't need the larger size.

### Setup and Speed

The SureColor P600 is a well-designed and elegant-looking machine. About 24 inches wide and 15 inches deep when no trays are extended, it will easily fit on most desks or rolling carts. When open, the rear support feeder adds about 2 inches to the depth, and the two roll-paper attachments, which can be removed and stored when not in use, add about 5 inches. Its boxy shape and light weight of 35 pounds make it easy to move around a home or studio—or bring to events for on-the-spot printing.

Setup is similar to other inkjet printers. Charging the inks took about 10 minutes. Installing the printer driver, downloaded from [epson.com](http://epson.com), was fairly straightforward. Wait until prompted by the installer to connect your printer to your

#### EPSON SURECOLOR P600

##### WHAT'S HOT

Truly outstanding print quality

##### WHAT'S NOT

Pricier ink than with other Epsoms

##### WHO IT'S FOR

Print mavens who want great color, maximum detail, and deep shadows



# PRINT SPEED

In minutes and seconds, using Photo Black ink and Epson Ultra Premium Photo Paper Luster

PHOTO PRINT MODE (high to highest resolution)	8x10 PRINT ON 8.5x11 PAPER	12x18 PRINT ON 13x19 PAPER
SuperFine 1440 High Speed	1:34	3:27
SuperFine 1440	3:00	6:51
Photo 1440 High Speed	1:55	4:18
Photo 1440	4:05	9:40
SuperPhoto 5760 HS	3:40	Not tested
SuperPhoto 5760	7:47	Not tested

The table (left) shows how print speed varies by resolution and size, clocked from when the P600 lays down the first line of ink.

computer, or you may install a very basic driver instead of the full-featured one. (Look for more tips in the expanded version of this review on PopPhoto.com.)

The P600's new 2.7-inch color touchscreen is a true joy to use. One of the nicest of its many features is step-by-step guidance for feeding different media. With just the touch of a button from the home screen, it also provides a clear and colorful representation of the ink levels and indicates which black ink is loaded.

The five feed options include a main top-loading feeder in the

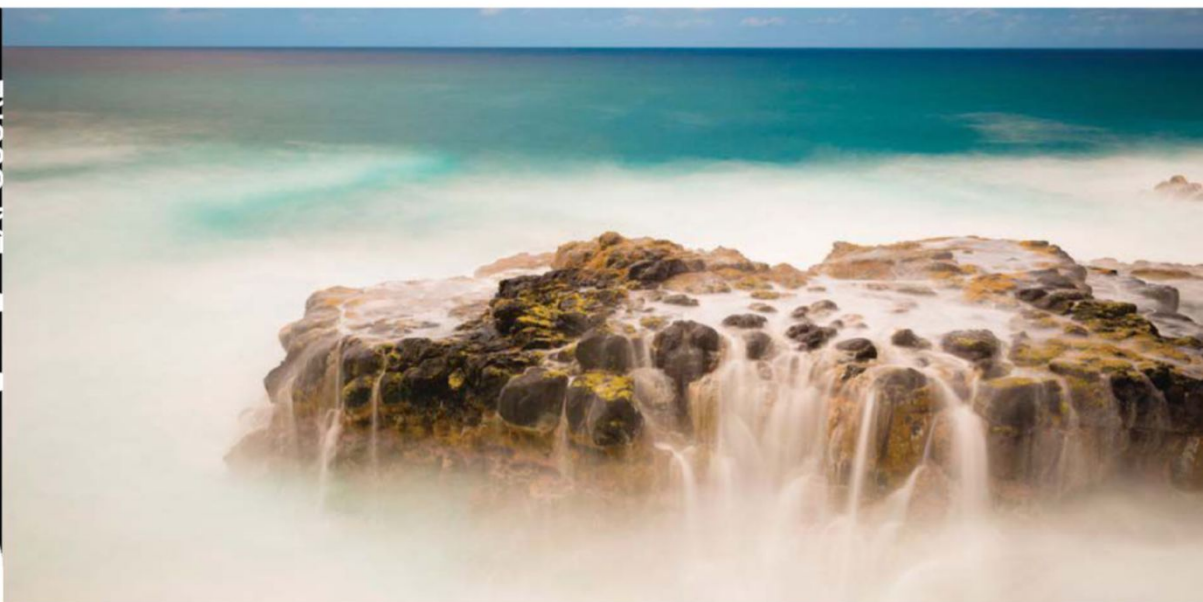
center of the machine, two roll-paper holders that hook onto the back, a front feed tray intended for sheets too thick for the top-loading feeder (which maxes out at 1.3mm), and a CD/DVD tray. Using the front feed can get tedious, since for each print you must open the tray before loading then close it before printing.

Luckily, we found that many heavy papers fed just fine through the main (top-loading) feeder, including Epson's Hot Press Bright (17 mil thick, with a weight of 330 gsm). Still, it's best to load heavy sheets one at a time. In our tests,

the main feed tray held and fed about 40 sheets of 10.4 mil photo paper (4x6-inch and letter-size) with no problems—a good quantity for long sessions. Epson states that the P600 will hold up to 120 sheets of plain paper and 30 sheets of photo paper; it can hold fewer sturdily as the sheet size increases.

Printing images from our computer hard-wired to the printer was considerably faster than with the competing Canon pigment ink printers and similar to the Epson R3000, but not as fast as the R2000, which uses fewer inks. Wireless printing speeds were noticeably slower, taking more than 50 percent longer, even with an excellent network connection; you may notice a lag if your wireless network bandwidth falls below 50 Mbps, especially when making large prints.

We performed these tests with the Photo Black ink and Ultra



## MICHAEL SEMAAN ON SCHNEIDER B+W FILTERS

*“Atop a rock outcropping with my tripod dangling off the edge, I felt the spray of the waves as I calculated the exposure in my head. I knew I wanted a deep depth of field, and to slow the action for a pillowy, cotton candy, cascade effect. I always carry a 3, 6 & 10-stop B+W ND. Between those values I can get the exposure I want. I added on the B+W Circular Polarizer, for a shot like this it makes the colors pop, and cuts through the waters surface glare.”*





Premium Photo Paper Luster at the Luster Paper setting. At the Photo 1440 setting (middle quality option), the P600 took a little more than 4 minutes to crank out an 8x10-inch picture on 8.5x11-inch paper and less than 10 minutes for a 12x18-inch photo on 13x19-inch paper. Using the High Speed mode, in which the print head lays down ink in both directions as it moves back and forth, cuts the print time by more than half. (See the table on the previous page for more details.)

Being able to print a borderless 4x6 in about 35 seconds at the SuperFine 1440 setting with High Speed enabled was a pleasant surprise and convinced us that the P600 could be ideal for use at events or fast-paced studio sessions. At the fastest settings, it printed semigloss 8x10s about a minute faster than Canon's Pro-

10, and matte 8x10s about two minutes faster.

We tested the P600's wireless capabilities using Epson's free iPrint app on Apple devices running iOS 8. It was extremely easy to select a photo from our Camera Roll or iCloud drive, then choose a paper size and paper type. We could also set up a queue for multiple prints. During printing, the app would not allow us to prepare any more images to print, as we could in Adobe Photoshop or Lightroom, but we could use other smartphone functions.

### Photo Print Quality

Like the Stylus Pro R3000 and 3880, the SureColor P600 has nine inks on board, of which eight work at any one time. The matte and photo black inks share a channel, so a swap must occur when you

**Tip: Adobe Photoshop Lightroom lets you adjust contrast and brightness quickly and easily using the sliders at the bottom of the Print Module. We improved overall color and shadow detail by setting both Brightness and Contrast to +10.**

want to switch from semigloss or gloss papers to matte media. We were hoping this would not be needed with this new model, but at least Epson has reduced the time it takes, as well as the amount of ink it eats up. Our test print in Save Ink Mode looked just fine, so we recommend applying it to hold your ink costs to about 1ml (about \$1) each time you switch between the black inks.

In assessing image quality, one of the SureColor P600's greatest strengths is the density of the deep shadow areas. This counts among its chief advantages over every other pigment inkjet printer we've reviewed to date. The increased density was noticeable with all the media we tested, including Epson's Ultra Premium Photo Paper Luster, Metallic Photo Paper (Glossy and Luster), and Exhibition Canvas Satin, as well as in fiber inkjet papers from Canson, Hahnemühle, and Red River Paper. Monochrome prints made using Epson's Advanced Black and White mode (built into the driver) produced stunning results on all the papers we tested.

But where things really got exciting was with matte media such as Epson's Hot Press Bright and Ultra Premium Presentation Paper Matte as well as a few matte canvas products, which benefit from an extra punch in the deep shadow areas.

Printing at higher res will boost overall contrast and detail to bring out the most of the P600's new ink set (especially with semigloss and glossy papers). In our tests, avoiding High Speed mode resulted in slightly better detail and better shadow density at the same print resolution. But on matte papers and canvas, the variations in print quality at different settings were much less apparent, letting us make an extremely high-quality 11x60-inch print on a 13-inch-

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## SPECIFICATIONS

**MAXIMUM PAPER SIZE:** 13x129 inches (through all feed paths)

**INK TYPE:** Pigment-based

**INK TANKS:** New nine-ink Epson UltraChrome HD set: (eight used at any one time), 25.9 ml each: Photo Black, Matte Black, Cyan, Vivid Magenta, Yellow, Light Cyan, Vivid Light Magenta, Light Black, Light Light Black

**MEDIA:** Cut-sheet and roll media from 3.5x5 in. to 13x129 in.; plain, glossy, semi-gloss, matte, fine art paper; roll paper and canvas; CD/DVD

**RESOLUTION:** Up to 5760x1440 dpi (color and black)

**INTERFACES:** 2.7-inch tilting touch-panel LCD, Wireless LAN, Ethernet, Hi-Speed USB (cables not included)

**COMPATIBLE WIRELESS**

**PRINTING SOFTWARE:** Epson Connect; Epson iPrint Mobile App; Apple AirPrint; Google Cloud Print

**SOFTWARE:** Raster photographic drivers, Print CD app (Mac/Windows)

**DIMENSIONS:** 24.2x14.5x9 in. (WxDxH); 35 lbs

**STREET PRICE:** \$800

**INFO:** [epson.com](http://epson.com)

**Andrew Darlow** ([imagingbuffet.com](http://imagingbuffet.com)) is a photographer and author of *301 Inkjet Tips and Techniques*.

if you want to have an extra one on hand at all times. All of these printers come with full cartridges.

For our money, Epson's SureColor P600 is worth the price. It's not every day that a groundbreaking printer comes along. We were truly blown away by the depth of shadows, color saturation,

sharpness, and detail on all of the media we tested it with. Being able to print fast (especially with matte media and canvas) with only a small sacrifice in quality was another big plus. And having a printer at the ready to print straight from a phone was icing on the cake. —Andrew Darlow

wide roll of Epson Exhibition Canvas Natural Gloss using the Photo 1440 in High Speed mode in just 10 minutes 40 seconds.

### Bottom Line

The SureColor P600 costs about \$150 more than Epson's Stylus Pro R2000 (that's before Epson's frequent rebates). Priced between its two 13-inch rivals from Canon, it streets for about \$100 more than the Pixma Pro-10 and \$200 less than the Pro-1.

The cost of ink is also a consideration, but it's hard to compare price across ink sets, since each printer uses ink differently. While the P600 has nine inks, the Pro-1 holds 12, five of them monochrome, in 36ml tanks; the Pro-10 has 10 inks, three of them monochrome, in 14ml tanks. More inks should result in fewer ink changes, but it also means you'll have to purchase more cartridges

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# SLIM WIN

## A TINY PANCAKE LENS FOR APS-C DSLRS SCORES BIG

**THE SLIMMEST** and lightest of Canon's EF-S glass, the 24mm f/2.8 STM (\$149, street) is also its first pancake lens for APS-C-format DSLR bodies. This new optic joins Canon's only other pancake, the full-frame 40mm f/2.8 EF. Proportionally, both are almost identical—no surprise since on Canon APS-C sensors this 24mm is the full-frame equivalent of about a 38mm lens.

Straddling the wide-to-normal focal range, this lens promises excellent street photographs and group portraits, plus the ability to capture satisfying stills and video thanks to its silent STM focusing motor, which, when mated with Canon's Movie Servo autofocus, delivers unusually smooth and quiet video focusing. As the acronym hints, the STM is a stepping motor, a mechanism shared by the lens's micro-stepping aperture drive. Similarly, this aperture mechanism changes aperture settings smoothly and inaudibly, a feature videographers especially should cotton to.

On the Canon EOS Rebel T4i (our test body), the 4.2-ounce lens made for a pleasingly svelte rig that—street photographers will like this—called little attention to itself. Besides its name, the lens's

only markings indicate the autofocus and manual focus positions on the switch.

The barrel's manual focus ring is narrow, appropriately so for a lens like this. Like Canon's 40mm pancake, it offers a variant of Canon's "full-time" manual-focus system: For manual focus in the AF mode, you must first autofocus on your subject or the focus ring will spin with no change to focus—as on a lens without full-time MF. Also like the 40mm, this new lens uses an electronic MF system, which means no stop at near- or far-focus.

In the field, one of this 24mm's strong suits was juxtaposing nearby subjects and distant backgrounds. The 6-inch close focusing distance causes a sharp foreground subject to loom very large, and, when opened up to f/2.8, the lens causes distant backgrounds to fade into pleasingly deep states of defocus. (Macro mavens take heed.)

On our optical bench in the Popular Photography Test Lab,



## SPECIFICATIONS

**24MM** (24.67mm tested), f/2.8 (2.83 tested), 6 elements in 5 groups. Focus ring turns 90 degrees.

**DIAGONAL VIEW ANGLE:** 59 degrees

**WEIGHT:** 0.26 lbs **FILTER SIZE:** 52mm

**MOUNTS:** Canon EF-S

**STREET PRICE:** \$149

**WEBSITE:** usa.canon.com

## TEST RESULTS

**DISTORTION:** 0.27% (Slight) barrel

**LIGHT FALLOFF:** Gone by f/3.5

**CLOSE-FOCUSING**

**DISTANCE:** 6 inches

**MAXIMUM MAGNIFICATION**

**RATIO:** 1:3.36



**The lens isn't compatible with Canon tele extenders, but it accepts EF-S extension tubes for closer close-ups.**

the lens delivered SQF numbers for sharpness all in the top-range (90th percentile) at our 11x14 bench-mark, an excellent showing.

In our tests using DxO Analyzer 5.3, its edge falloff performance, gone by f/3.5, was stronger than similar lenses we've tested, including the Canon 40mm f/2.8 (f/4) and the now-discontinued Pentax 21mm f/3.2 APS lens (f/4.5). Likewise, its close focusing distance compared nicely to the 40mm's 11.37 inches—a plus for macro shooters who want to reach out and style their subjects. Its subject magnification (1:3.36) was also stronger than the Canon 40mm (1:4.91) or the Pentax (1:5.7).

As with all pancake lenses, its slender size is its trump card. It measures about a third the size of Canon's popular 18–55mm EF-S kit zoom. On a Rebel body, especially the little SL1, it brings a DSLR to almost mirrorless proportions, while providing noticeably better image quality.

And how about that price? A bargain! It streets for about \$400 less than the new Pentax 21mm HD pancake, an f/3.2. —Julia Silber



## SUBJECTIVE QUALITY FACTOR

Our standard lens test, SQF rates sharpness by print size

Size	5x7	8x10	11x14	16x20	20x24
2.5	95.9	94.8	91.5	86.1	79.0
4.0	95.2	95.1	92.4	87.0	80.5
5.6	95.7	95.7	93.3	88.6	83.5
8.0	96.6	96.5	93.0	88.4	82.6
11.0	95.3	92.2	92.5	87.4	81.3
16.0	95.9	94.6	91.7	85.9	78.8
22.0	95.2	93.7	90.2	82.9	73.6

24mm

KEY A+ A B+ B C+ C D F

# RAD PRIME

## A MANUAL-FOCUS SPEED DEMON

**ACCORDING TO** the manufacturer, fans of Rokinin's growing line of high-speed, manual-focus lenses—now 15 strong—were clamoring for a classic 50mm f/1.4. They finally got it; actually they got two. Rokinin now offers a standard 50mm f/1.4 AS IF UMC full-frame lens (\$399, street) and its cousin, a video-friendly version known as the 50mm T/1.5 Cine DS. Both lenses are available in five mounts. Our test optic was the standard Canon-mount 50mm f/1.4 “Digital Photo” lens—so named to distinguish it from the Cine variant.

The lens has an aluminum alloy barrel and weighs in at 1.18 pounds, about 6 ounces heavier than most 50mm f/1.4 glass that we've tested from Canon, Nikon, Sony, and Zeiss. Only Sigma's 1.83-pounder weighs more. The same holds true for length: At 3.22 inches, the Rokinin is longer than all the others except the Sigma at 4.1 inches.

The focusing ring is easy to grip, and its 140-degree turning radius suits it to extremely fine focusing. Its turn was inaudible in a test video. The focusing-scale numerals in feet (orange) and meters (white) are nice and bright; the orange practically glows. The depth-of-field scale spans the entire aperture range,

and came in very handy in situations in which precision-focusing ranges mattered most.

While this lens made a strong showing in the Popular Photography Test Lab, it really won us over in the field. Especially when shooting close in at maximum aperture, it produced strongly satisfying sharpness in the in-focus subject and a nice *bokeh* just inches before and beyond.

Setting exposures on our Canon EOS-1D X test body was easy. Aperture Priority and Program modes automatically set correct shutter speeds for the lens-set apertures. In Shutter Priority and Manual modes, we referred to the viewfinder metering scale.

On our lab's optical test bench, the Rokinin earned Excellent-range SQF scores that roughly matched the other 50mm f/1.4s. In our distortion tests using DxO Analyzer 5.3, though, it did not perform as strongly, landing in the Visible range (0.32% barrel distortion) as opposed to the

2.93 in.



**The Rokinin lens barrel doesn't turn, extend, or contract during focus.**

Slight- or Imperceptible-range showings of the other models.

The Rokinin rebounded in our vignetting tests, however, matching its Canon, Nikon, and Sony rivals with light falloff at f/2.8. The Zeiss and Sigma beat them narrowly at f/2. With close focusing distances, the Rokinin fell mid-pack, but its maximum subject magnification ratio of 1:5.79 was second only to the Sigma's 1:5.04.

Rokinin lenses usually carry the lowest price in their class, and this one is no exception. The Canon 50mm f/1.4 streets for the same price, but it offers autofocus, which remains a must for some shooters (unlike the Rokinin, it doesn't include a hood). Manual-focus fans, though, should definitely give this Rokinin a look. —Julia Silber



## SPECIFICATIONS

**50MM** (53.08mm tested), f/1.4 (1.54 tested), 9 elements in 6 groups. Focus ring turns 140 degrees.

**DIAGONAL VIEW ANGLE:** 46 degrees

**WEIGHT:** 1.18 lbs **FILTER SIZE:** 77mm

**MOUNTS:** Canon EF, Nikon,

Pentax, Sony A, Sony E

**INCLUDED:** Lenshood, lens pouch

**STREET PRICE:** \$399

**WEBSITE:** rokinon.com

## TEST RESULTS

**DISTORTION:** 0.32% (Visible) barrel

**LIGHT FALLOFF:** Gone by f/2.8

**CLOSE-FOCUSING**

**DISTANCE:** 17.25 inches

**MAXIMUM MAGNIFICATION RATIO:** 1:5.79

## SUBJECTIVE QUALITY FACTOR

Our standard lens test, SQF rates sharpness by print size

Size	6x7	8x10	11x14	16x20	20x24
1.4	96.3	95.1	92.3	88.1	78.1
2.0	96.7	95.7	93.2	88.0	81.3
2.8	97.1	96.2	94.1	89.7	84.1
4.0	97.2	96.4	94.3	90.1	84.6
5.6	97.1	96.2	94.1	89.7	84.1
8.0	97.1	96.2	94.1	89.7	84.0
11.0	96.9	95.9	93.6	88.6	82.7
16.0	96.5	95.4	92.8	87.2	80.2
22.0	95.9	94.7	91.6	84.9	76.4

**KEY** A+ A B+ B C+ C D F

### ROKINON 50MM F/1.4 AS IF UMC

#### WHAT'S HOT

Fast, well-priced with beautiful *bokeh*

#### WHAT'S NOT

No autofocus; visible distortion

#### WHO IT'S FOR

Manual fans who want sharpness and smooth and silent focusing





### ▲ Knowing Look ▼

Model-turned-photographer Christa made this elegant yet informal portrait of Katie Richmond. She shot outside in the bright Los Angeles sun using a Hasselblad with an 80mm Kodak Ektar f/2.8 lens and Ektachrome Daylight film. She opened up the shadows with a reflector. The exposure: 1/100 sec at f/5.6.

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### Birth of a Classic ▼

The arrival of the Nikon S2 marked the first serious challenge to Leica's status as the supreme professional 35mm rangefinder. Among its desirable features: a 1:1 life-size viewfinder, a rapid advance lever, and superb Nikkor lenses, all at a price approximately a third less than the Leica M3.

### Swan Song of Another Classic ▼

This new Pacemaker Speed Graphic boasted a top-mounted coupled rangefinder that was both more rugged and more convenient than the venerable Kalart side-mounted unit that came before it. However, by this time the era of the press camera had definitely ended, the quality of the camera notwithstanding.



### Photo Blockbuster ▼

Edward Steichen, one of the giants of photography (below, pointing), shows his brother-in-law Carl Sandburg some of the photos included in the *Family of Man* exhibition held at New York's Museum of Modern Art. Comprising some 400 photographs made by 280 photographers, this may have been the most popular photo show in history, traveling to major cities in America and around the world after a record-breaking run at MoMA.

—Harold Martin



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16 Mega Pixels

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20 Mega Pixels

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- microSD, microSDHC, microSDXC Card Slot
- Uses Nikon 1 Lenses • 3.0" Touchscreen LCD
- 20 fps Shooting with Full-Time AF
- Full HD 1080p Video Recording at 60 fps
- Available in Black, Orange, Silver or White



18 Mega Pixels

with 10-30mm Lens #N1J41030\*

## Nikon 1 V3 Mirrorless System Camera

- EXPEED 4A Image Processor • Built-In Wi-Fi
- microSD, microSDHC, microSDXC Card Slot
- Uses Nikon 1 Lenses • 3.0" Tilting Touchscreen LCD
- Movie e-VR Stabilization • Hybrid AF System
- 20 fps Shooting with Full-Time AF • ISO 12800
- Full HD 1080p Video Recording at 60 fps



18 Mega Pixels

with 10-30mm Lens #N1V31030

## OLYMPUS OM-D E-M1 Mirrorless System Camera

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- 3.0" Tilting Touchscreen LCD • 8 fps Shooting
- SDHC/SDXC Card Slot • Built-In Wireless
- FAST Dual Phase- & Contrast-Detection AF
- 10 fps and 1/8000 sec. Top Shutter Speed
- Dust/Splash/Freezeproof Magnesium Alloy Body



16 Mega Pixels

Body Only #OLEM1

## OLYMPUS OM-D E-M10 Mirrorless System Camera

- TruePic VII Image Processor • Micro 4/3 System
- 3.0" Tilting Touchscreen LCD • 8 fps Shooting
- SDHC/SDXC Card Slot • Built-In Wi-Fi
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- Full HD 1080p Video Recording at 30 fps
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16 Mega Pixels

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18/2.0 XF R.....	599.00	60/2.4 XF Macro.....	649.00
23/1.4 XF R.....	899.00	10-24/4 XF R OIS.....	999.00
27/2.8 XF.....	449.00	16-50/3.5-5.6 XC OIS.....	399.00
35/1.4 XF R.....	599.00	18-55/2.8-4 XF R OIS.....	699.00
55-200/3.5-4.8 XF R LM OIS.....	699.00		
50-230/4.5-6.7 XC OIS.....	399.00		

### ▶ Nikon

#### Nikon 1 Mirrorless Lenses

10/2.8 AW.....	196.95	10-30/3.5-5.6 VR PD.....	296.95
10/2.8.....	246.95	10-100/4.0-5.6 VR.....	546.95
18.5/1.8.....	186.95	11-27.5/3.5-5.6 AW.....	146.95
32/1.2.....	896.95	11-27.5/3.5-5.6 ED.....	186.95
6.7-13/3.5-5.6 VR.....	496.95	30-110/3.8-5.6 VR.....	246.95
10-30/3.5-5.6 VR.....	186.95	70-300/4.5-5.6 VR.....	996.95

### ▶ SAMSUNG

#### Mirrorless System Lenses

10/3.5 Fisheye.....	CALL	30/2.0 NX Pancake.....	CALL
16/2.4 Pancake.....	CALL	45/1.8.....	CALL
20/2.8 Pancake.....	CALL	45/1.8 [T6] 2D/3D.....	CALL
60/2.8 Macro ED OIS SSA.....	CALL		CALL
85/1.4 ED SSA.....	CALL	18-55/3.5-5.6 OIS.....	CALL
12-24/4-5.6 E.....	CALL	18-200/3.5-6.3 ED OIS.....	CALL
16-50/3.5-5.6 ED OIS.....	CALL	20-50/3.5-5.6 ED.....	CALL
16-50/2.8 S ED OIS.....	CALL	50-200/4-5.6 ED OIS II.....	CALL

### ▶ Panasonic

#### Lumix G Vario Mirrorless System Lenses

8/3.5 Fisheye.....	639.95	14/2.5 Aspherical.....	324.95
15/1.7 Aspherical Leica DG Summilux.....	597.99		
20/1.7 II Aspherical.....	427.99		
25/1.4 Aspherical Leica DG Summilux.....	597.99		
42.5/1.2 Asph. Power OIS Leica DG Nocticon.....	1,597.99		
45/2.8 Asph. Mega OIS Leica DG Macro-Elmarit.....	897.99		
7-14/4.0 Asph.....	968.00	12-35/2.8 X Asph.....	997.99
12-32/3.5-5.6 Asph.....	347.99	35-100/2.8.....	1,197.99
14-42/3.5-5.6 Aspherical Mega OIS.....	167.00		
14-42/3.5-5.6 X PZ Power OIS (Silver).....	316.00		
14-45/3.5-5.6 Aspherical Mega OIS.....	289.00		
14-140/4.0-5.8 HD Aspherical Mega OIS.....	429.95		
14-140/3.5-5.6 Aspherical Power OIS.....	560.49		
45-150/4-5.6 Asph.....	249.00	45-200/4-5.6 OIS.....	269.00
45-175/4-5.6 X OIS.....	379.00	100-300/4.0-5.6 OIS.....	597.99

### ▶ OLYMPUS

#### Flash System

FL-300R Flash.....	136.95	RF-11 Ring Flash.....	249.95
FL-600R Flash.....	299.95	SRF-11 Ring Set.....	559.95
FL-50R Flash.....	499.95	TF-22 Twin Flash.....	449.95
STF-22 Twin Flash Set.....	739.95		

#### M.Zuiko Micro 4/3 Mirrorless Lenses

9mm f/8.0 Fisheye Body Cap Lens.....	99.00
15mm f/8.0 Fisheye Body Cap Lens.....	49.00
12/2.0 (46e).....	799.00
17/2.8 (37e).....	299.00
17/1.8 (46e).....	499.00
25/1.8 (46e).....	399.00
12-40/2.8 Pro ED (62e).....	999.00
12-50/3.5-6.3 ED EZ (52e).....	499.00
14-42/3.5-5.6 EZ ED (37e).....	349.00
14-42/3.5-5.6 II R (37e).....	299.00
14-150/4-5.6 (58e).....	599.00
40-150/4-5.6 ED R (58e).....	199.00
75-300/4.8-6.7 II ED (58e).....	549.00

### ▶ PENTAX

#### AF Flash System

AF-360FGZ.....	218.00	AF-540FGZ II.....	
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#### DA Digital AF Lenses

15/4.0 ED AL HD Limited (49e).....		35/2 AL (49e).....	
14/2.8 ED IF (77e).....		40/2.8 Limited (49e).....	
21/3.2 AL Limited (49e).....		35/2.8 Macro HD Limited (49e).....	
35/2.8 Macro HD Limited (49e).....		560/5.6 ED AW (112e).....	
40/2.8 HD Limited (49e).....		10-17/3.5-4.5 ED IF (77e).....	
50/1.8 (52e).....		12-24/4 ED AL IF (77e).....	
55/1.4 SDM (58e).....		16-50/2.8 ED AL SDM (77e).....	
70/2.4 HD Limited (49e).....		17-70/4.0 AL IF SDM (67e).....	
200/2.8 ED IF SDM.....		18-55/3.5-5.6 AL WR (52e).....	
300/4.0 ED IF SDM (77e).....		18-135/3.5-5.6 ED AL (IF) DC WR (62e).....	
18-135/3.5-5.6 ED AL (IF) DC WR (62e).....		20-40/2.8-4 HD Limited ED DC WR (55e).....	
20-40/2.8-4 HD Limited ED DC WR (55e).....		50-135/2.8 ED SDM (67e).....	
50-135/2.8 ED SDM (67e).....		50-200/4-5.6 ED WR (52e).....	
55-300/4-5.8 HD ED WR (58e).....			
60-250/4.0 ED IF SDM (67e).....			

#### "FA" AF Lenses for 35mm & Digital SLRs

31/1.8 Limited.....		50/1.4 (49e).....	
35/2.4 AL (49e).....		50/2.8 Macro (52e).....	
43/1.9 Limited (49e).....		77/1.8 Limited (49e).....	
100/2.8 FA WR Macro (49e).....			

### ▶ SONY

#### Flash System

HVL-F20M.....	149.99	HVL-F43M.....	398.00
HVL-F20S.....	149.99	HVL-F60M.....	548.00

#### E-Mount Mirrorless Lenses

16/2.8 (49e).....	248.00	35/1.8 OSS (49e).....	448.00
20/2.8 (49e).....	348.00	35/2.8 ZA (49e).....	798.00
24/1.8 (49e).....	1,098.00	50/1.8 OSS (49e).....	298.00
30/3.5 Macro (49e).....	278.00	55/1.8 ZA FE (49e).....	998.00
10-18/4 OSS (62e).....			848.00
16-50/3.5-5.6 OSS (40.5e).....			348.00
16-70/4 ZA OSS (55e).....			998.00
18-55/3.5-5.6 (49e).....			298.00
18-105/4 G OSS (72e).....			598.00
18-200/3.5-6.3 (67e).....			898.00
18-200/3.5-6.3 OSS (62e).....			848.00
18-200/3.5-6.3 PZ OSS (67e).....			1,198.00
24-70/4 ZA OSS (67e).....			1,198.00
28-70/3.5-5.6 OSS (55e).....			498.00
55-210/4.5-6.3 OSS (49e).....			348.00
70-200/4.0 G OSS (72e).....			1,498.00

#### Digital Lenses

16/2.8 Fish-eye.....	998.00	20/2.8 (72e).....	748.00
24/2 Carl Zeiss (72e).....			1,398.00
30/2.8 DT Macro (49e).....			198.00
35/1.4 G (55e).....	1,498.00	50/1.8 DT (49e).....	168.00
35/1.8 DT (55e).....	218.00	50/1.4 (55e).....	448.00
50/1.4 Carl Zeiss ZA (72e).....			1,498.00
50/2.8 Macro (55e).....	598.00	85/2.8 (55e).....	298.00
85/1.4 Carl Zeiss (72e).....			1,698.00
100/2.8 Macro (55e).....			798.00
135/1.8 Carl Zeiss (77e).....			1,798.00
135/2.8 STF (72e).....			1,398.00
300/2.8 G APO II (42eR).....			7,498.99
500/4 G (42eR).....			12,998.00
11-18/4.5-5.6 DT (77e).....			798.00
16-35/2.8 ZA SSM (77e).....			1,998.00
16-50/2.8 DT (40.5e).....			798.00
16-80/3.5-5.6 DT (62e).....			998.00
16-105/3.5-5.6 DT (62e).....			698.00
18-55/3.5-5.6 DT SAM II (55e).....			218.00
18-135/3.5-5.6 (62e).....			498.00
18-250/3.5-6.3 DT (62e).....			648.00
24-70/2.8 Carl Zeiss (77e).....			1,998.00
28-75/2.8 (67e).....			898.00
55-200/4.0-5.6 DT (55e).....			198.00
55-300/4.5-5.6 DT (62e).....			298.00
70-200/2.8 G SSM II (77e).....			2,998.00
70-300/4.5-5.6 G (62e).....			998.00
70-400/4-5.6 G2.....			2,198.00
1.4x Teleconverter.....	548.00	2x Teleconverter.....	548.00

## Panasonic Lumix DMC-GM1 Mirrorless System Camera

- Venus Engine Image Processor • Micro 4/3 System
- 3.0" Touchscreen LCD • SDHC/SDXC Card Slot
- Full HD 1080i AVCHD Video at 60 fps • ISO 25600
- 5 fps Continuous Shooting • Built-In Wireless
- Highly Compact Magnesium Alloy Body
- Available in Black or Orange



with 12-32mm Lens #PADMCGM1\*

16 Mega Pixels

## Panasonic Lumix DMC-GX7 Mirrorless System Camera

- Micro 4/3 System • 3.0" Tilting LCD Touchscreen
- SDHC/SDXC Card Slot • 90° Tilting EVF
- Full HD 1080p AVCHD Video at 60 fps
- Focus Peaking and Magnification Windows
- Built-In Wireless and NFC Connectivity
- Available in Black or Silver



with 14-42mm II Lens #PADMCGX7\*

16 Mega Pixels

## Panasonic Lumix DMC-GH4 4K Mirrorless System Camera

- DCI 4K 4096x2160 at 24p • Full HD up to 60p
- UHD 4K 3840x2160 at 30p/24p • 3.0" LCD
- Live View Finder • High-Speed 49-Point AF
- 4:2:2 8-Bit or 10-Bit HDMI Output
- Support for 59.94p, 23.98p, 50p, & 24p
- Magnesium Alloy, Weather-Sealed Body



Body Only #PADMCGH4\*

16 Mega Pixels

## PENTAX K-3 DSLR Camera

- PRIME III Image Processor • 3.2" LCD
- Pentax K Lens Mount • Dual SD Card Slots
- In-Camera Shake Reduction Stabilization
- Full HD 1080i/p Video Recording
- Continuous Shooting up to 8.3 fps
- Weather-Sealed Magnesium Alloy Body



Body Only #PEK3

23 Mega Pixels

## SONY Alpha A6000 Mirrorless System Camera

- 3.0" Tilting LCD • Uses Sony E-mount Lenses
- SDHC, SDXC, MS Pro Duo, MS PRO HG Duo
- Card Slot • Up to 11 fps Shooting • ISO 25600
- Full HD 1080i/p AVCHD Video at 24/60 fps
- Built-In Wi-Fi Connectivity with NFC
- Available in Black or Silver



Kit with 16-50mm OSS Lens #SOA6000\*

24 Mega Pixels

## SONY Alpha A7 Mirrorless System Camera

- Full Frame Exmor CMOS Sensor • 3.0" Tilttable LCD
- SDHC, SDXC, MS Pro Duo, MS PRO HG Duo
- Card Slot • Uses Sony E-mount Lenses
- Built-In Wi-Fi and NFC • Direct Access Interface
- Full 1080/60p with Uncompressed Output



Body Only #SOA7B

Kit with 28-70mm Lens #SOA7KB

24 Mega Pixels

## SONY Alpha SLT-A58 DSLR Camera

- 2.7" Tilting LCD • Uses Sony Alpha mount Lenses
- SDHC, SDXC, MS Pro Duo, MS PRO HG Duo
- Card Slot • Full HD 1080i/p Video at 60 or 24fps
- 51fps Full Resolution Continuous Shooting
- SteadyShot INSIDE Image Stabilization
- ISO 100-16000 with Noise Reduction



DT 18-55mm SAM II Lens #SOSLTA58K

20 Mega Pixels

## SONY a77 II DSLR Camera

- 3.0" 3-Way Tilting LCD • 12fps Shooting
- Uses Sony Alpha mount Lenses
- Full HD 1080p Video Recording at 60 fps
- SDHC, SDXC, MS Pro Duo, MS PRO HG Duo, XC-HG Duo Card Slot • ISO 25600
- Built-In Wi-Fi Connectivity with NFC



Body Only #SOA772

24 Mega Pixels

## LENSES AND FLASHES for DSLR & Mirrorless Cameras

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DI-II for Digital SLRs Only DI-III for mirror-less cameras Only

Rebates Expire 2-28-15

C = Canon N = Nikon P = Pentax SA = Sony Alpha SE = Sony E Mount

		SKU #	Avail. for	Rebate	Price
DI-II	60mm f/2.0 LD IF Macro (55e)	#TA902DI*	C, N, SA	—	524.00
DI	90mm f/2.8 Macro (55e)	#TA902BM*	C, N, P, SA	—	499.00
DI	90mm f/2.8 SP Macro VC USD (58e)	#TA902BVC*	C, N	\$50	699.00**
DI	180mm f/3.5 LD IF Macro (72e)	#TA18035*	C, N, SA	—	739.00
DI-II	10-24/3.5-4.5 (77e)	#TA102435*	C, N, P, SA	—	499.00
DI-II	16-300/3.5-6.3 VC PZD (67e)	#TA1630035DI*	C, N, SA	\$30	599.00**
DI-II	17-50/2.8 XR LD IF Asph. (67e)	#TA175028*	C, N, P, SA	—	499.00
DI-II	17-50/2.8 XR VC LD IF Asph. (67e)	#TA175028*Q	C, N	—	649.00
DI-II	18-200/3.5-6.3 (62e)	#TA1820035*	C, N, P, SA	—	199.00
DI-III	18-200/3.5-6.3 VC (62e)	#TA1820035S*	SE Black or Silver	—	739.00
DI-II	18-270/3.5-6.3 VC PZD (62e)	#TA18270*	C, N, SA	\$50	399.00**
DI	24-70/2.8 VC USD (82e)	#TA247028*	C, N, P, SA	\$100	1,199.00**
DI	28-75/2.8 XR (67e)	#TA287528*	C, N, P, SA	—	499.00
DI	28-300/3.5-6.3 XR LD (62e)	#TA2830035XD*	C, P, SA	—	419.00
DI	28-300/3.5-6.3 VC PZD (67e)	#TA2830035DI*	C, N, SA	—	849.00
DI	70-200/2.8 LD IF Macro (77e)	#TA7020028M*	C, N, P, SA	—	769.00
DI	70-200/2.8 SP VC USD (77e)	#TA7020028*	C, N, SA	\$100	1,399.00**
DI	70-300/4-5.6 LD Macro (62e)	#TA70300M*	C, N, P, SA	—	199.00
DI	70-300/4-5.6 VC USD (62e)	#TA70300*	C, N, SA	\$50	399.00**
DI	150-600/5-6.3 VC USD (95e)	#TA150600S*	C, N, SA	—	1069.00
	1.4x SP AF Pro Teleconverter	#TA14XP*	C, N	—	224.00
	2x SP AF Pro Teleconverter	#TA2XP*	C, N	—	254.00

### SIGMA

DC — for Digital SLRs Only DG — Optimized for Digital SLRs DN — Designed for Mirrorless Cameras.

H	HSM Model with Canon, Nikon, Sigma	Mount	SKU #	Rebate	Price
DC	4.5/2.8 EX Circular Fisheye HSM <sup>R</sup>	C, N, P, SI, SA	#SI4528EX*	\$100	799.00**
DG	8/3.5 EX Circular Fisheye HSM <sup>R</sup>	C, N, SI, SA	#SI835*	—	899.00
DC	10/2.8 EX Fisheye HSM <sup>R</sup>	C, N, P, SI, SA	#SI1028EXDC*	—	649.00
DG	15/2.8 EX Diagonal Fisheye <sup>R</sup>	C, N, P, SI, SA	#SI1528DG*	—	609.00
DN	19/2.8 (46e) Black or Silver	MFT, SE	#SI1928DN*	—	199.00
DG	20/1.8 EX DF RF Aspherical (82e)	C, N, SI, SA	#SI2018*	—	629.00
DG	24/1.8 EX DF Asph. Macro (77e)	C, N, P, SI, SA	#SI2418M*	—	549.00
DG	28/1.8 EX DF Asph. Macro (77e)	C, P, SI, SA	#SI2818M*	—	449.00
DN	30/2.8 (46e) Black or Silver	MFT, SE	#SI3028DN*	—	199.00
DC	30/1.4 HSM (62e)	C, N, P, SI, SA	#SI3014DCHSM*	—	499.00
DG	35/1.4 HSM (67e)	C, N, P, SI, SA	#SI3514*	—	899.00
DG	50/1.4 EX HSM (77e) <sup>H</sup>	C, N, SI, SA	#SI5014*	\$100	399.00**
DG	50/1.4 HSM (77e) <sup>H</sup>	C, N, SI, SA	#SI5014A*	—	949.00
DG	50/2.8 EX Macro (55e)	C, N, SI, SA	#SI5028MDG*	—	369.00
DN	60/2.8 (46e) Black or Silver	MFT, SE	#SI6028DN*	\$30	209.00**
DG	70/2.8 EX Macro (62e)	C, N, P, SI	#SI7028MDG*	—	499.00
DG	85/1.4 EX HSM (77e)	C, N, P, SI, SA	#SI8514*	—	969.00
DG	105/2.8 EX Macro OS HSM (62e)	C, N, SI, SA	#SI10528MDG*	\$300	669.00**
DG	150/2.8 EX APO Macro OS HSM (72e)	C, N, SI, SA	#SI15028AMO*	—	1,099.00
DG	180/2.8 EX APO Macro OS HSM (86e)	C, N, SI, SA	#SI18028AMEO*	—	1,699.00
DG	300/2.8 APO EX HSM (46e Rear)	C, N, P, SI, SA	#SI30028DG*	—	3,399.00
DG	500/4.5 APO EX HSM (46e Rear)	C, N, P, SI, SA	#SI50045DG*	—	4,999.00
DC	8-16/4.5-5.6 HSM	C, N, S	#SI8164556*	—	699.00
DC	10-20/4.5-5.6 EX HSM (77e)	C, N, P, SI, SA	#SI102045D*	\$80	399.00**

C = Canon MFT = Micro 4/3 N = Nikon O = Olympus P = Pentax SI = Sigma SA = Sony Alpha SE = Sony E

R	Rear Slip-in Gelatin Filter Slot	Mount	SKU #	Rebate	Price
DC	10-20/3.5 EX HSM (82e)	C, N, P, SI, SA	#SI102035*	—	649.00
DG	12-24/4.5-5.6 EX Asph. HSM II	C, N, SI, SA	#SI122445*	—	949.00
DC	17-50/2.8 EX OS HSM (77e)	C, N, P, SI	#SI175028*	\$150	519.00**
DC	17-70/2.8-4.0 OS Mac HSM TSC (72e)	C, N, P, SI, SA	#SI177028A*	—	499.00
DC	18-35/1.8 HSM (72e)	C, N, P, SI, SA	#SI183518DC*	—	799.00
DC	18-200/3.5-6.3 OS II HSM (72e)	C, N, P, SI, SA	#SI1820035*	—	499.00
DC	18-200/3.5-6.3 OS Macro HSM (62e)	C, N, P, SI, SA	#SI1820035D*	—	399.00
DC	18-250/3.5-6.3 OS Macro HSM (62e)	C, N, P, SI, SA	#SI1825035M*	\$200	349.00**
DG	24-70/2.8 EX IF HSM (82e)	C, N, P, SI, SA	#SI247028*	—	899.00
DG	24-105/4.0 OS HSM (82e)	C, N, SI, SA	#SI24105*	—	899.00
DC	50-150/2.8 EX APO OS HSM (77e)	N	#SI5015028*	—	989.00
DG	50-500/4.5-6.3 APO OS HSM (95e)	C, N, P, SI, SA	#SI505004563*	\$150	1,509.00**
DG	70-200/2.8 EX APO OS HSM (77e)	C, N, P, SI, SA	#SI7020028*	\$200	1,199.00**
DG	70-300/4-5.6 Macro (58e)	C, N, P, SI, SA	#SI703004*	—	169.00
DG	70-300/4-5.6 APO Macro (58e)	C, N, P, SI, SA	#SI703004DG*	—	179.00
DG	120-300/2.8 OS HSM (105e)	C, N, S	#SI120300*	—	3,599.00
DG	120-400/4.5-5.6 APO OS HSM (77eR)	C, P, SI	#SI120400*	—	899.00
DG	150-500/5-6.3 APO OS HSM (86e)	C, N, P, SI, SA	#SI150500*	\$200	869.00**
DG	1.4x EX APO Tele-Converter	C, N, S	#SI14XDG*	—	249.00
DG	2x EX APO Tele-Converter	C, N, S	#SI2XDG*	—	299.00

### SIGMA FLASHES

DG	EF-610 ST	C, N, P, SI, SA	#SIEF610ST*	—	165.00
DG	EF-610 Super Flash	C, N, P, SI, SA	#SIEF610*	—	255.00
DG	EM-140 TTL Ringlight	C, N, P, SI, SA	#SIEM140DG*	—	379.00



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## Canon Digital Rebel T5i DSLR

- 3.0" Vari-Angle Touchscreen LCD
- Uses Canon EF Lenses (1.6x factor)
- SD/SDHC/SDXC Card Slot
- STM Lens Support for Quiet AF in Movies
- Full HD 1080 Video with Continuous AF
- ISO 100-12800, Expandable to 25600



Rebates Expire 1-31-15	Price	Rebate	Final Cost
Kit with 18-55mm IS STM #CAEDRT5IK.....	849.99	<b>\$100</b>	<b>749.99</b>
T5i Kit with 18-55mm IS II #CAEDRT5K.....	549.99	<b>\$500</b>	<b>499.99</b>
T5i Kit with 18-55mm IS #CAEDRT3IK.....			

## Canon EOS-70D DSLR

- Dual Pixel CMOS AF with Live View
- DIGIC 5+ Image Processor
- SD/SDHC/SDXC Card Slot
- Uses Canon EF & EF-S Lenses
- 3.0" Vari-Angle Touchscreen
- 7 fps Continuous Shooting
- Built-In Wireless Connectivity
- Full HD 1080p Video



Rebates Expire 1-31-15	Price	Rebate	Final Cost
Body Only #CAE70D.....	1,199.00	<b>\$200</b>	<b>999.00</b>
Kit with 18-55mm STM #CAE70D1855.....	1,349.00	<b>\$200</b>	<b>1,149.00</b>
EOS 60D Body Only #CAE60D.....			
EOS 60D Kit with 18-135mm IS #CAE60D18135.....			

## Canon EOS-7D Mark II DSLR

- 3" Clear View II LCD • Native ISO 16000
- Dual Pixel CMOS AF with Live View
- Dual CF and SDHC/XC Card Slots
- Continuous 10 fps Shooting
- Built-In GPS Receiver & Digital Compass
- Full HD 1080p/60 Video & Movie Servo AF



Price	Rebate	Final Cost
Body Only #CAE7D2.....	1,799.00	
EOS 7D Body Only #CAE7D.....		
EOS 7D Kit with 18-135mm IS #CAE7D18135.....		
EOS 7D Kit with 28-135mm IS #CAE7D28135.....		

## Canon EOS-6D DSLR

- Full-Frame CMOS Sensor • 3.0" LCD
- DIGIC 5+ Image Processor
- Uses Canon EF Lenses
- SD/SDHC/SDXC Card Slot
- Built-In Wi-Fi and GPS Connectivity
- Full HD 1080p with Manual Controls
- Extended ISO Range of 50-102400
- Up to 4.5 Full Resolution FPS
- Built-In HDR & Multiple Exposure Modes



Rebates (Mail-in) Expire 1-31-15	Price	Rebate	Final Cost
Body Only #CAE6D3.....	1,899.00	<b>\$300</b>	<b>1,599.00</b>
Kit with 24-105mm f/4 L #CAE6D24105.....	2,499.00	<b>\$300</b>	<b>2,199.00</b>

## Canon EOS-5D Mark III DSLR

- 3.2" Clear View High Resolution LCD
- DIGIC 5+ Image Processor
- 61-Point High Density AF
- Uses Canon EF Lenses
- Dual CF, SD Card Slots
- Full HD 1080/30p & 720/60p Formats
- Extended ISO Range (50-102400)
- Built-In HDR & Multiple Exposure Modes



Rebates (Mail-in) Expire 1-31-15	Price	Rebate	Final Cost
Body Only #CAE5D3.....	3,399.00	<b>\$300</b>	<b>3,099.00</b>
Kit with 24-105mm L IS #CAE5D324105.....	3,999.00	<b>\$300</b>	<b>3,699.00</b>

## Canon EOS-1Dx DSLR

- Dual DIGIC 5+ Image Processors
- Magnesium Alloy Body
- Eye-Level Pentaprism Viewfinder
- 3.2" LCD Monitor
- Uses Canon EF Lenses
- Dual CF card slots
- 1920 x 1080 HD Video Capture
- Live View Still and Video Recording
- 61-Point High Density Auto Focus



Rebates (Mail-in) Expire 1-31-15	Price	Rebate	Final Cost
Body Only #CAE1DX.....	6,799.00	<b>\$800</b>	<b>5,999.00</b>

## Canon SLR Lenses and Flashes

Rebates (Mail-in) Expire 1-31-15 — Call for Current Rebates & Promotions

EOS Flash System	MAP	Rebate	Final
270EX II.....	169.99		
320EX.....			
430EX II.....	299.99		
600EX-RT.....	549.99		
MR-14EX II Ringlight.....	549.99		
MT-24EX Twin Flash.....	829.99		

EF-S Digital Lenses	MAP	Mail-in Rebate	Final
24/2.8 STM (52ø).....	149.99		
60/2.8 USM Macro (52ø).....	469.99	<b>\$50</b>	<b>419.99</b>
10-18/4.5-5.6 IS STM (67ø).....	299.00		
10-22/3.5-4.5 USM (77ø).....	649.99	<b>\$50</b>	<b>599.99</b>
15-85/3.5-5.6 IS USM (72ø).....	799.99	<b>\$100</b>	<b>699.99</b>
17-55/2.8 IS USM (67ø).....	879.99	<b>\$80</b>	<b>799.99</b>
17-85/4-5.6 IS USM (67ø).....	CALL		
18-55/3.5-5.6 IS (58ø) II.....	199.99		
18-135/3.5-5.6 IS (67ø).....	499.99		
18-200/3.5-5.6 IS (72ø).....	699.99		
55-250/4-5.6 IS USM II (58ø).....	249.99		
55-250/4-5.6 IS STM II (58ø).....	299.99		

EF Lenses	MAP	Mail-in Rebate	Final
20/2.8 USM (72ø).....	539.99	<b>\$50</b>	<b>489.99</b>
24/2.8 IS USM (58ø).....	599.99	<b>\$50</b>	<b>549.99</b>
28/1.8 USM (58ø).....	509.99	<b>\$60</b>	<b>449.99</b>
28/2.8 IS USM (58ø).....	549.99	<b>\$50</b>	<b>499.99</b>
35/2 IS USM (67ø).....	599.99	<b>\$50</b>	<b>549.99</b>
40/2.8 STM Pancake (52ø).....	199.99	<b>\$50</b>	<b>149.99</b>
50/1.8 II (52ø).....	125.99	<b>\$20</b>	<b>105.99</b>
50/2.5 Macro (52ø).....	299.99	<b>\$30</b>	<b>269.99</b>
50/1.4 USM (58ø).....	399.99	<b>\$50</b>	<b>349.99</b>
MP-E 65/2.8 1x-5x Macro (58ø).....	1,049.00	<b>\$100</b>	<b>949.99</b>
85/1.8 USM (58ø).....	419.99	<b>\$50</b>	<b>369.99</b>
100/2 USM (58ø).....	499.99	<b>\$50</b>	<b>449.99</b>
100/2.8 USM Macro (58ø).....	599.99	<b>\$50</b>	<b>549.99</b>
400/4.0 DO IS II USM (52ø).....	6,899.00		
24-105/3.5-5.6 IS STM (77ø).....	599.00		
28-135/3.5-5.6 IS USM (72ø).....	CALL		
70-300/4-5.6 IS USM (58ø).....	649.99	<b>\$250</b>	<b>399.99**</b>
70-300/4.5-5.6 DO IS USM (58ø).....	1,399.00		
75-300/4.0-5.6 III (58ø).....	199.99		
75-300/4.0-5.6 III USM (58ø).....	234.99		



TSE MF Lenses	MAP	Rebate	Final
17/4.0 L.....	2,249.00		
24/3.5 L II.....	1,999.00		
45/2.8.....	1,399.00		
90/2.8.....	1,399.00		

EF "L" Lenses	MAP	Mail-in Rebate	Final
14/2.8 USM II.....	2,249.00	<b>\$100</b>	<b>2,149.00</b>
24/1.4 II (77ø).....	1,649.00	<b>\$100</b>	<b>1,549.00</b>
35/1.4 USM (72ø).....	1,479.00	<b>\$150</b>	<b>1,329.00</b>
50/1.2 USM (72ø).....	1,549.00	<b>\$150</b>	<b>1,399.00</b>
85/1.2 USM II (72ø).....	2,099.00	<b>\$100</b>	<b>1,999.00</b>
100/2.8 IS USM Macro (67ø).....	949.99	<b>\$50</b>	<b>899.99</b>
135/2.0 USM (72ø).....	1,049.00	<b>\$50</b>	<b>999.00</b>
180/3.5 IS USM Macro (72ø).....	1,499.00	<b>\$50</b>	<b>1,449.00</b>
200/2.8 USM II (72ø).....	779.99	<b>\$30</b>	<b>749.99</b>
200/2.0 IS USM (52ø).....	5,999.00		
300/4.0 IS USM (77ø).....	1,449.00	<b>\$100</b>	<b>1,349.00</b>
300/2.8 IS USM II (52ø rear).....	6,599.00		
400/5.6 USM (77ø).....	1,339.00	<b>\$100</b>	<b>1,239.00</b>
400/2.8 IS II (52ø rear).....	10,499.00		
500/4 IS USM II (52ø rear).....	9,499.00		
600/4.0 IS II (52ø rear).....	11,999.00		
8-15/4.0 Fish-eye USM.....	1,349.00	<b>\$50</b>	<b>1,299.00</b>
16-35/4 IS USM (77ø).....	1,199.00	<b>\$100</b>	<b>1,099.00</b>
16-35/2.8 USM II (82ø).....	1,699.00	<b>\$200</b>	<b>1,499.00</b>
17-40/4.0 USM (77ø).....	839.99	<b>\$140</b>	<b>699.99</b>
24-70/4.0 IS USM (77ø).....	999.99	<b>\$200</b>	<b>799.99</b>
24-70/2.8 II USM (82ø).....	2,099.00	<b>\$150</b>	<b>1,949.00</b>
24-105/4 IS USM (77ø).....	1,149.00		
28-300/3.5-5.6 IS USM (77ø).....	2,549.00		
70-200/4.0 USM (67ø).....	709.99	<b>\$100</b>	<b>609.99</b>
70-200/4.0 IS USM (77ø).....	1,299.00	<b>\$100</b>	<b>1,199.00</b>
70-200/2.8 USM (77ø).....	1,449.00	<b>\$250</b>	<b>1,199.00</b>
70-200/2.8 IS II USM (77ø).....	2,299.00	<b>\$150</b>	<b>2,149.00</b>
70-300/4.0-5.6 IS USM (67ø).....	1,449.00	<b>\$100</b>	<b>1,349.00</b>
100-400/4.5-5.6 IS USM (77ø).....	1,699.00	<b>\$200</b>	<b>1,499.00</b>

EF Teleconverters	MAP	Rebate	Final
1.4x III.....	449.99		
2x III.....	449.99		

\*\* with purchase of EOS-6D, 7D, 7D mkII, 70D, or 60D

## Nikon D3300 DSLR

Rebates Expire 1-31-15

- EXPEED 4 Image Processor
- Full HD 1080p Video Recording
- 3.0" LCD • 5 fps Shooting
- Uses Nikon AF Lenses (1.5x factor)
- SD/SDHC/SDXC Card Slot
- Expandable ISO 25600
- Easy Panorama Mode and Guide Mode
- Nikon Inc. limited warranty included



	Price	Rebate	Final Cost
D3300 is available in Black, Grey or Red			
Kit with 18-55mm VR II #NID33001855*	646.95	\$150	496.95
<b>D3200</b> Kit Black w/18-55mm VR #NID32001855*	529.95	\$80	449.95

## Nikon D5300 DSLR

- EXPEED 4 Image Processor
- Full HD 1080p Video at 60 fps
- 3.2" Vari-Angle LCD • ISO 100-25600
- Uses Nikon AF Lenses (1.5x factor)
- SD/SDHC/SDXC Card Slot
- Built-In Wi-Fi and GPS Connectivity
- Nikon Inc. limited warranty included



Rebates Expire 1-31-15

	Price	Rebate	Final Cost
D5300 18-55mm Kit is available in Black, Grey or Red			
Kit with 18-55mm VR II (B, G, R) #NID53001855*	896.95	\$100	796.95
Kit with 18-140mm VR (Black) #NID530018140	1,299.95	\$300	999.95
<b>D5200</b> Kit with 18-55mm VR #NID52001855*	799.95	\$150	649.95

## Nikon D7100 DSLR

- Magnesium Alloy Body
- Moisture Resistant
- EXPEED 3 Image Processor
- 1080p Full HD Video Capture
- Accepts Nikon AF Lenses (1.5x factor) • 3.2" LCD
- Dual SD/SDHC/SDXC Card Slots
- Built-In Flash with Commander Function
- Nikon Inc. limited warranty included



Rebates Expire 1-31-15

	Price	Rebate	Final Cost
Body Only #NID7100	1,199.95	\$200	999.95
Kit with 18-140mm VR DX #NID710018140	1,696.95	\$400	1,296.95

## Nikon D750 DSLR

- FX-Format (Full-Frame) CMOS Sensor
- Uses Nikon AF Lenses • 3.2" Tilting LCD
- EXPEED 4 Image Processor
- SD/SDHC/SDXC Card Slot
- Built-In Wi-Fi Connectivity
- Full HD 1080p Video Recording at 60 fps
- Nikon Inc. limited warranty included



Rebates Expire 1-31-15

	Price	Rebate	Final Cost
Body Only #NID750	2,296.95		
Kit with 24-120mm VR #NID75024120	3,596.95	\$600	2,996.95
<b>D610</b> Body Only #NID610	1,996.95	\$500	1,496.95
<b>D610</b> Kit with 24-85mm VRT #NID6102485	2,596.95	\$700	1,896.95

## Nikon D810 DSLR

- FX-Format CMOS Sensor
- EXPEED 4 Image Processor
- Optical Low-Pass Filter • 3.2" LCD
- CF & SD Dual Card Slots
- Nikon F Mount Lens Mount
- Expandable Sensitivity to ISO 51200
- Full HD 1080p Video at 60/30/24 fps
- External Mic and Headphone Inputs
- Continuous Shooting to 5 fps in FX Mode
- Nikon Inc. limited warranty included



Rebates Expire 1-31-15

	Price	Rebate	Final Cost
Body Only #NID810	3,296.95	\$300	2,996.00

## Nikon D4s DSLR

- FX-format (full-frame) CMOS Sensor
- 14-Bit RAW Files & 12-Bit RAW S Format • 3.2" LCD
- Full HD 1080p Video at 60 fps
- EXPEED 4 Image Processor
- Compatible with Most Nikkor Optics
- 11 fps Shooting for 200 Shots with AE/AF • ISO 50-409600
- CF Type 1 & XQD Compatible
- 1000 Base-T Gigabit Wired LAN Support
- Nikon Inc. limited warranty included



Body Only #NID4S.....6,496.95

## Nikon SLR Lenses and Flashes

Rebates Expire 1-31-15 — Call for Current Rebates and Promotions

## Nikon Instant Savings on Lenses with purchase of any Nikon DSLR

AF Flashes	Price	Rebate	Final
SB-300	146.95		
SB-500	246.95		
SB-700	326.95		
SB-910	546.95		
R1 Wireless Twin Flash			
R1C1 Wireless Twin Flash System			



DX ED-IF Lenses for Digital Only	Price	Rebate	Final
10-5/2.8 Fish-Eye			
35/1.8 G AF-S (520)	196.95		
40/2.8 G AF-S Micro (520)	276.95		
85/3.5 G ED VR Micro	526.95	\$100	426.95
10-24/3.5-4.5 G AF-S (770)			
12-24/4 G AF-S (770)			
16-85/3.5-5.6 G AF-S VR (670)			
17-55/2.8 G AF-S (770)			
18-55/3.5-5.6 G AF-S II (520)			
18-55/3.5-5.6 G AF-S VR (520)	196.95		
18-55/3.5-5.6 G AF-S VR II (520)	246.95		
18-105/3.5-5.6 G AF-S VR *	396.95		
18-140/3.5-5.6 G AF-S VR **	496.95	\$200 **	296.95
18-200/3.5-5.6 G AF-S VR II	596.95		
18-300/3.5-5.6 G AF-S ED VR (770)	996.95		
18-300/3.5-6.3 G AF-S ED VR (670)	896.95		
55-200/4-5.6 G AF-S (520)			
55-200/4-5.6 G AF-S VR	246.95	\$100	146.95
55-300/4.5-5.6 G AF-S VR	396.95	\$200	196.95



D-Type AF Lenses	Price	Rebate	Final
14/2.8 D ED			
16/2.8 D (390) with Hood			
20/2.8 D (620)			
20/1.8 G AF-S ED (770)	796.95		
24/2.8 D (520)			
24/1.4 G AF-S ED (770)			
24/3.5 D ED PC-E (770)			
28/1.8 G AF-S (670)	696.95		
28/2.8 D (520)			
35/2.0 D (520)			
35/1.4 G AF-S ED (670)			
35/1.8 G AF-S ED (580)	596.95		
45/2.8 D ED PC-E Micro (770)			
50/1.8 D (520)			
50/1.8 G AF-S (580)	216.95		



D-Type AF Lenses	Price	Rebate	Final
50/1.4 D (520)			
50/1.4 G AF-S (580)			
58/1.4 G AF-S (720)	1,696.95		
60/2.8 D Micro (620) (1:1)			
60/2.8 G AF-S ED Micro (620)			
85/1.8 G AF-S (670)	496.95		
85/1.4 D IF (770)			
85/1.4 G AF-S (770)			
85/2.8 PC-E Micro (770)			
105/2.8 G AF-S ED-IF VR Micro (620)			
105/2.0 DC D with Hood (720)			
180/2.8 D ED-IF (720)			
200/4 D ED-IF Micro with Case (620)			
200/2 G AF-S ED-IF VR II (520)			
300/4.0 D AF-S ED-IF (770)			
300/2.8 G AF-S VR (520-R)			
400/2.8 G AF-S VR ED (520)			
500/4.0 G AF-S VR ED (520)			
600/4.0 G AF-S VR ED (520)			
14-24/2.8 G AF-S ED-IF	1,996.95		
16-35/4.0 G AF-S ED VR (770)	1,256.95		
17-35/2.8 D AF-S ED-IF (770)			
18-35/3.5-4.5 AF-S G ED (770)	746.95		
24-70/2.8 G AF-S ED-IF (770)	1,886.95		
24-85/2.8-4.0 D IF (720)			
24-85/3.5-4.5 G AF-S ED VR	596.95	\$100	496.95
24-120/4.0 G AF-S ED VR (770)	1,296.95		
28-300/3.5-5.6 G AF-S ED VR	1,046.95	\$250	796.95^
70-200/4.0 G AF-S ED VR (670)	1,396.95		
70-200/2.8 G AF-S ED-IF VR II (770)	2,396.95		
70-300/4.0-5.6 G (620)			
70-300/4.5-5.6 G-AFS VR	586.95		
80-200/2.8 D with Collar (770)			
80-400/4.5-5.6 G AF-S ED VR (770)	2,696.95		
200-400/4 G AF-S ED VR II (520)			
TC-14E III (1.4x) Teleconverter			
TC-17E II (1.7x) Teleconverter			
TC-20E III (2x) Teleconverter			

\*\* When purchased with a D3200, D3300, D5200, D5300, D7100

^ When Purchased with D7100, D610, D750, DF, D810 D4s



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## Canon Powershot G16

- 3.0" LCD • Full HD 1080/60p Video
- 5x Optical Zoom • 4x Digital Zoom
- 6.1-30.5mm f/1.8-2.8 (35mm equiv: 28-140mm) • SD/SDHC/SDXC Card Slot
- Enhanced Wi-Fi Capabilities
- Continuous Shooting at 9.3 fps

#CAPSG16.....499.99.....**Less \$50 Rebate....449.99**



12 Mega Pixels

## FUJIFILM X30

- 2.8" LCD • Die-Cast Magnesium Alloy
- Full HD 1080 Video at 60fps
- 4x Optical Zoom • ISO 100-12800
- 7.1-28.4mm f/2.8 (35mm equiv: 28-112mm) • SD/SDHC/SDXC Card Slot
- Film Simulation and Advanced Filters

Black or Silver #FUX30\*



12 Mega Pixels

## Nikon Coolpix A

- 3.0" LCD • No Optical Low-Pass Filter
- Manual Focus Ring Adjustment
- 18.5mm f/2.8 (35mm equiv: 28mm)
- SD/SDHC/SDXC Card Slot
- Full HD 1080p Video with Stereo Sound
- Capture Photos in RAW Format

Black or Silver #NICPA\*.....1,099.95



16 Mega Pixels

## OLYMPUS Stylus XZ-2 iHS

- 3.0" Swiveling Touchscreen LCD
- 4x Optical Zoom • 2x Digital Zoom
- 6-24mm f/1.8-2.5 (35mm equiv: 27-108mm) Lens • 11 Art Filters
- SD/SDHC/SDXC Card Slot
- Full HD 1080p Video Recording

#OLXZ2B



12 Mega Pixels

## Panasonic Lumix DMC-LX7

- 3.0" LCD • SDHC/SDXC Card Slot
- Full HD 1080 Video Recording
- 3.8x Optical Zoom • 7.5x Digital Zoom
- 4.7-17.7mm f/1.4-2.3 (35mm equiv: 24-90mm) Leica Vario-Summilux Lens
- RAW and RAW+JPEG Recording Options

Black or White #PADMLX7\*



10 Mega Pixels

## SONY CyberShot DSC-RX100 III

- 3.0" Multi-Angle Xtra Fine LCD
- 2.9x Optical Zoom • 11x Digital Zoom
- 8.8-25.7mm f/1.8-2.8 (35mm equiv: 24-70mm) Carl Zeiss Vario-Sonnar T\* Lens
- MS Pro Duo/Pro HG-Duo, SDHC/SDXC Card Slot • Full HD Video • Built-In Wi-Fi with NFC

#SODSCRX100M3



20 Mega Pixels

## ▶ MEMORY CARDS

### CF Compact Flash

	Delkin				Kingston		Lexar		Sandisk		
	500x	700x	1000x	1050x	Ultimate 266x	Ultimate 600x	800x	1066x	Ultra 50MBs	Extreme 120MBs	Extreme Pro 160MBs
16GB	29.95	37.95	49.95	—	21.95	33.95	40.95	48.95	49.95	48.00	69.95
32GB	44.50	54.99	74.95	89.95	30.95	49.95	54.95	79.99	94.99	66.89	99.95
64GB	84.50	72.50	99.95	159.95	49.95	—	74.95	143.65	—	94.95	199.50
128GB	—	194.95	214.00	254.95	—	—	194.95	249.98	—	210.00	349.99
256GB	—	—	—	—	—	—	399.95	543.91	—	—	649.95
512GB	—	—	—	—	—	—	899.00	—	—	—	—

### CFast 2.0 High Speed

High-speed file transfer to meet the demands of broadcast, cinema, and photography.

### SANDISK

60GB (450mb/s).....\$399.95  
128GB (515mb/s) \$799.95

### LEXAR

32GB.....\$179.99 128GB.....\$879.99  
64GB.....\$399.99 256GB.....\$1,299.99

### XQD High-Speed for Nikon D4

	Lexar	Sony
	Professional 1333x	N Series 125MBs
32GB	222.49	99.95
64GB	349.95	189.95

### SDHC Secure Digital High Capacity

	Delkin	Kingston	Sandisk	
	Pro Class10	Micro Class 4 Mobility	Standard Class 4	Micro Class 4
4GB	7.95	—	4.95	5.95
8GB	9.95	8.95	5.95	6.95
16GB	10.95	9.95	8.45	8.95
32GB	17.95	20.46	15.95	16.95

### UHS1 Ultra High Speed

		Lexar	Sandisk			Sony		Lexar	Sandisk			Sony
		Class 10 400x	600x	Micro 633x	Extreme 80MBs	Extreme Pro 95MBs	Micro 80MBs	Class 10 400x	600x	Micro 633x	Extreme 80MBs	Extreme Pro 95MBs
SDXC	8GB	9.95	—	—	18.62	—	—	13.49	7.75	17.95	—	—
	16GB	14.95	19.95	23.95	26.95	33.95	27.95	19.95	9.95	31.95	22.95	14.99
	32GB	23.95	28.95	34.95	37.95	47.95	39.74	33.50	17.95	38.95	29.45	—
	64GB	36.95	46.35	66.95	74.95	94.99	74.95	66.95	36.95	84.95	79.95	52.45
SDXC	128GB	79.95	93.95	—	139.95	—	—	126.95	—	149.95	—	—
	256GB	—	260.95	—	—	—	—	—	—	359.95	—	—
	512GB	—	—	—	—	—	—	—	—	—	—	—
		Note: Not all devices support SDXC cards										

### UHS1 Speed Class 3 (U3)

		Lexar	Sandisk			Sony		Lexar	Sandisk			Sony
		Class 10 400x	600x	Micro 633x	Extreme 80MBs	Extreme Pro 95MBs	Micro 80MBs	Class 10 400x	600x	Micro 633x	Extreme 80MBs	Extreme Pro 95MBs
SDXC	8GB	9.95	—	—	18.62	—	—	13.49	7.75	17.95	—	—
	16GB	14.95	19.95	23.95	26.95	33.95	27.95	19.95	9.95	31.95	22.95	14.99
	32GB	23.95	28.95	34.95	37.95	47.95	39.74	33.50	17.95	38.95	29.45	—
	64GB	36.95	46.35	66.95	74.95	94.99	74.95	66.95	36.95	84.95	79.95	52.45
SDXC	128GB	79.95	93.95	—	139.95	—	—	126.95	—	149.95	—	—
	256GB	—	260.95	—	—	—	—	—	—	359.95	—	—
	512GB	—	—	—	—	—	—	—	—	—	—	—
		Note: Not all devices support SDXC cards										



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- Grooved center column • Bubble Level/s
- Rubber Feet & Retractable Metal Spikes
- Included padded carry bag



Model	Ball Head	Load Capacity	Max. Height	Folded	Weight	SKU #	Price
<b>Anodized Aluminum Tripods</b>							
AT-3421	BA-106T	6.6 lb	59"	16.8"	2.7 lb	#OBAT3421106T	\$159.95
AT-3431	BA-108T	8.8 lb	61.3"	17.3"	2.8 lb	#OBAT3431108T	\$199.95
AT-3461	BA-111T	11 lb	63.4"	17.5"	3.5 lb	#OBAT3441111T	\$249.95
AT-3451	BA-113T	13.2 lb	65.5"	18.1"	3.5 lb	#OBAT3451113T	\$289.95
AT-3461	BA-117T	17.6 lb	67.1"	18.9"	4.5 lb	#OBAT3461117T	\$299.95
<b>6x Carbon Fiber Tripods</b>							
CT-3431	BE-108T	8.8 lb	59.5"	17"	2.5 lb	#OBCT3431108T	\$399.95
CT-3451	BE-113T	13.2 lb	61.3"	17.1"	2.5 lb	#OBCT3451113T	\$479.95
CT-3461	BE-117T	17.6 lb	64.5"	17.4"	3.1 lb	#OBCT3461117T	\$479.95
CT-3481	BE-126T	26.4 lb	68"	18.9"	3.8 lb	#OBCT3481126T	\$499.95
CT-3521	BE-106T	6.6 lb	56.4"	14.8"	2.4 lb	#OBCT3521106T	\$379.95
CT-3531	BE-108T	8.8 lb	60.8"	15.5"	2.5 lb	#OBCT3531108T	\$399.95
CT-3551	BE-113T	13.2 lb	62.4"	16"	2.6 lb	#OBCT3551113T	\$469.95
CT-3561	BE-117T	17.6 lb	64.3"	16.8"	3.1 lb	#OBCT3561117T	\$349.95
CT-3581	BE-126T	26.4 lb	67.9"	16.9"	3.9 lb	#OBCT3581126T	\$369.95



## BATTERY GRIPS

- Accepts 2 lithium-ion batteries to effectively double the camera's battery life (Batteries not included)
- The included AA battery holder allows you to use 6 AA batteries for added convenience (except BG-N3)
- Alternate shutter release button, main and sub command dials, and an AE-L/AF-L button are provided to facilitate shooting in a vertical orientation

for Canon 5D Mark III .....	BG-C9	#VEBGC9.....	\$99.95
for Canon 5D Mark II .....	BG-C2	#VEBGC22.....	\$69.95
for Canon 7D .....	BG-C4	#VEBGC4.....	\$64.95
for Canon 70D .....	BG-C10	#VEBGC10.....	\$84.95
for Canon 60D .....	BG-C6	#VEBGC6.....	\$69.95
for Canon T5i, T4i, T3i, T2i .....	BG-C5.2	#VEBGC52.....	\$67.95
for Nikon D7100 .....	BG-N11	#VEBGN11.....	\$89.95
for Nikon D5300 .....	BG-N13	#VEBGN13.....	\$59.95
for Nikon D3300, D3200 .....	BG-N12	#VEBGN12.....	\$59.95
for Nikon D600, D610 .....	BG-N10	#VEBGN10.....	\$79.95
for Nikon D800, D800E .....	BG-N7	#VEBGN7.....	\$89.95

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## lighting equipment and accessories

### Astral Extreme 2 Monolight Portrait Kit

#### Kit Includes:

- 2 x Astral Extreme AS-X-400 Monolight
- 10' Air-Cushioned Light Stand
- Luxbanx Small 36" Octagonal Softbox
- Fabric Grid 36" for Luxbanx
- Speed Ring
- Convertible 45" Umbrella - White Satin with Removable Black Backing

#IMASX4002LK ..... \$1,124.50

### Parabox Speedlight Kit

- 24x36" Parabox Softbox • Umbrella Bracket with Adjustable Shoe
- 10' Light Stand • Adjustable Locking Triple Flash Adapter

#IMPBSB2436K ..... \$218.84

## FILTERS

### HOYA

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	52mm	58mm	67mm	72mm	77mm
UV, Skylight (1B) HMC	16.50	21.50	27.50	29.95	36.20
UV, Skylight (1B) Super HMC	27.89	26.49	33.00	52.95	44.99
Linear Polarizer	16.99	25.00	38.85	36.85	44.90
Circular Polarizer	23.95	29.95	34.95	42.95	38.90
Circular Polarizer HMC	39.95	49.00	55.90	69.00	104.90
"Moose" Warm Circular Polarizer	35.75	39.55	53.90	55.65	91.50
K2 Yel, X0 Yel/Grn, Grn X1, Or G, Red 25A HMC	23.95	28.35	41.95	46.35	60.90
Close Up Set (+1, +2, +4)	39.99	47.35	53.00	63.00	68.00
Close-Up Set HMC (+1, +2, +4)	52.68	64.88	73.00	100.68	145.30
Intensifier - Blue, Green Field, Enhancement (Red)	34.68	39.95	55.08	60.00	71.50
Neutral Density 2x, 4x, 8x HMC	23.88	19.95	36.95	30.99	34.80
Star 6, Star 8	16.89	22.50	43.35	49.90	46.68

### heliopan

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	55mm	58mm	67mm	72mm	77mm
Skylight (1B), UV	39.99	41.99	62.99	77.99	89.99
Skylight (1B), UV SH-PMC	72.99	78.99	103.99	131.99	157.99
Circular Polarizer, Slim Circular Polarizer	115.99	121.99	151.99	180.99	195.99
Circular Polarizer SH-PMC, Slim Circ. Pol. SH-PMC	161.99	171.99	214.99	242.99	275.99
#5, #8, #11, #13, #15, #22, 81A, 81B, 81C	49.99	51.99	78.99	96.99	108.99
Digital Filter	176.99	180.99	222.99	261.99	301.99

## FILM - B&W AND COLOR

### COLOR PRINT

#### FUJIFILM

Superia	Ektar
CA 200 135-24.....	100 135-36.....
CH 400 135-24.....	100 120 Roll.....
CH 400 135-36.....	
CZ 800 135-24.....	160 135-36.....
	160 120 Roll.....
	160 220 Roll.....
	160 220 PP (5).....
	400 135-36.....
	400 120 Roll.....
	400 220 Roll.....
	400 220 PP (5).....
	800 135-36.....
	800 120 Roll.....

#### Kodak

Gold Max
GC 400 135-24.....
GC 400 135-36.....

### COLOR SLIDE

#### FUJIFILM

Provia	Velvia RVP
RDP 100F 135-36.....	Pro 50 135-36.....
135-36PP (5).....	Pro 50 120 Roll.....
RDP 100F 120 Roll.....	100 135-36.....
135-36PP (5).....	100 120 Roll.....

### PROCESSING MAILERS

#### FUJIFILM

Slide	
36 Exposures (35mm).....	Print C41 35mm.....
	Print C41 120 Roll.....
	Print C41 220 Roll.....

### B+W

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	55mm	58mm	62mm	67mm	72mm	77mm
UV Haze SC	18.50	24.95	28.99	31.95	34.00	39.99
UV Haze MRC 010M	35.50	31.50	36.30	42.90	49.89	71.75
Circular Polarizer SC	83.95	85.95	83.50	80.00	73.95	99.00
Circular Polarizer MRC	78.00	87.53	82.50	109.99	89.99	119.99
Circular Polarizer Slim	56.95	49.99	68.00	69.99	59.99	80.00
Skylight KR1.5 (1A)	24.50	25.95	31.95	38.95	42.00	53.95
Digital Pro UV MC	41.95	41.95	44.00	—	—	—
Graduated (N.D. & Colors)	99.95	106.95	99.50	109.50	142.50	152.95
Neutral Density 106	56.00	60.95	97.95	105.95	121.95	137.95
Close-Up Lenses 1, 2, 3, 4, 5	25.95	25.95	31.95	38.95	45.95	53.95

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	52mm	58mm	62mm	72mm	77mm
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Grad ND 0.6	74.95	63.95	82.90	119.95	139.95
Circular Polarizer	74.10	89.95	119.90	129.95	199.99
Ultra Clear	34.95	38.95	45.95	54.95	54.95
Haze 86	38.95	47.95	56.90	64.95	99.95
ND 1.2	41.50	56.95	74.90	109.95	129.95
ND 0.6	48.95	50.95	69.95	99.95	119.95
Soft FX3	56.95	63.95	82.90	119.95	139.95
Star 4 pt 2	64.95	56.95	74.90	109.95	129.95

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- Winners notified by Aug. 10, 2015.

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will be published in the November 2015 issue of **Photographer's Forum**. All contest finalists will be published in the hardcover book, **Best of Photography 2015**.

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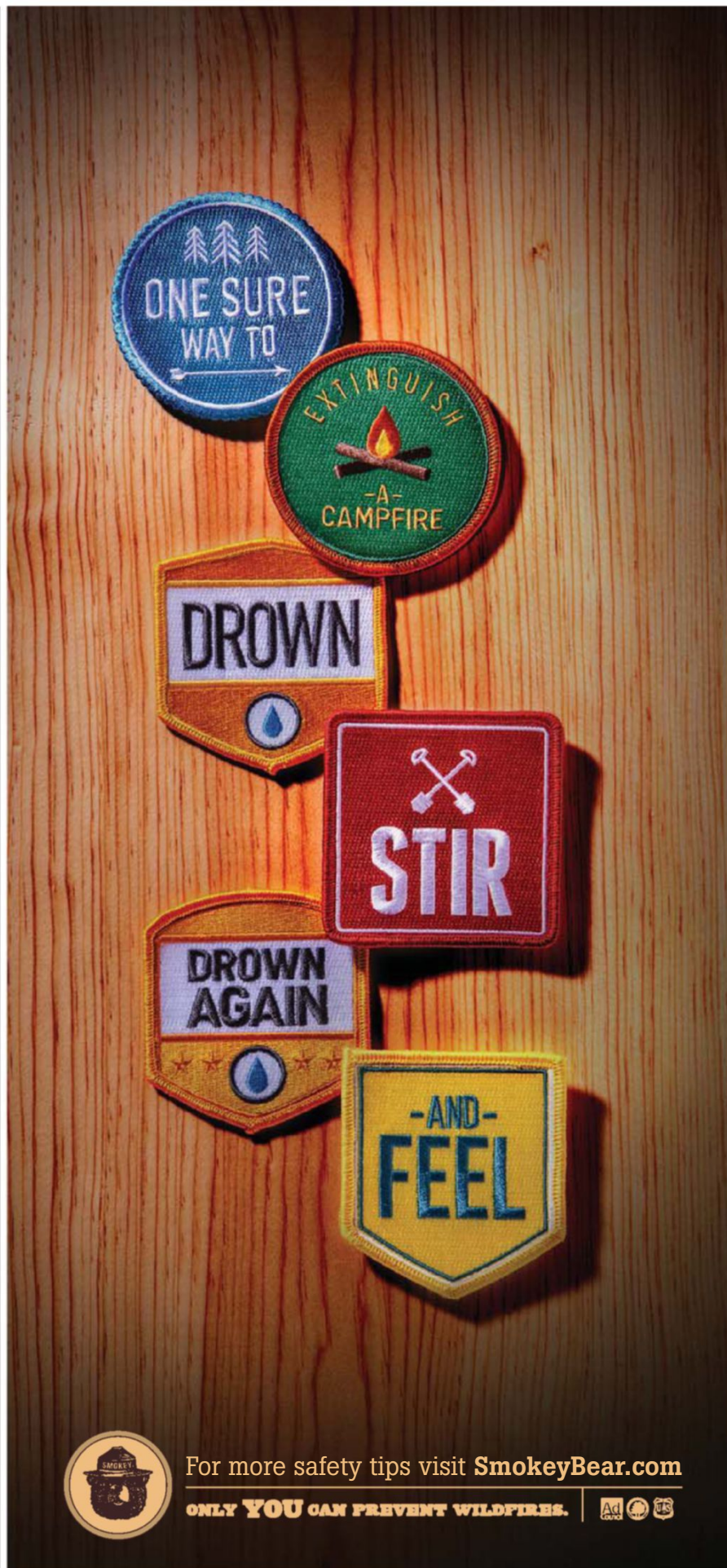
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# INNER SELVES

**Ryan Burke  
is his own  
best model**

I BEGAN doing self-portraiture years before I began dressing up. My portraits were simpler in the beginning, shot in a documentary fashion rather than in formal photo shoots. It wasn't until I moved to New York City that I began creating more elaborate portraits. I like variety, so I tend to change between my characters a lot. Abstract ideas inspire me: a vibe at an event, color combinations, or the movement and rhythm of materials. I tend to gravitate toward brighter, bolder colors but I found these beautiful leaves and decided to play off the soft, muted color. Everything else just followed: the lighting, pose, and editing all reflect the mood of the leaves.

—As told to  
Sara Cravatts

Perspectives of power



Focal length: 15mm Exposure: F/11 0.6 sec ISO400 © Ian Plant

new

# SP 15-30mm F/2.8 Di VC USD

[Model A012] for Canon, Nikon, and Sony\* mount

Introducing the world's first\*\* fast full-frame ultra-wide-angle zoom with image stabilization

Push your vision even wider with the new Tamron SP 15-30mm F/2.8 Di VC USD zoom — the world's first in its class with image stabilization. The latest addition to Tamron's line-up of SP (Super Performance) lenses, designed for both for full frame and crop-sensor DSLRs, is built to the highest standards, and enables you to capture images of expansive vistas free of annoying lens aberrations thanks to Tamron's use of proprietary XGM eXpanded Glass Molded Aspherical lens element technology. This bold new zoom delivers superb corner-to-corner resolution — equal to a prime lens — at every focal length and a bright F/2.8 aperture throughout its 15-30mm zoom range. Its rugged design features a fluorine-coated front element — which sheds water and repels dirt — and enhanced moisture resistant construction. Fast. Ultra-wide. Image stabilized. Powerful from any perspective.

\*Sony mount without VC

\*\*For F/2.8 ultra-wide-angle zoom lens for full-frame DSLR cameras (Source: Tamron)



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α7R, f/10, 1/160, ISO 100  
Lens used: 85mm F1.4 ZA



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